



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

Recd 24 Feb 1858

PROGRESS
OF THE
CITY OF NEW-YORK,

During the Last Fifty Years;

WITH
NOTICES OF THE PRINCIPAL CHANGES
AND IMPORTANT EVENTS.

A LECTURE

DELIVERED BEFORE THE MECHANICS' SOCIETY AT MECHANICS'
HALL, BROADWAY,

ON 29TH DECEMBER, 1851.

BY
CHARLES KING, LL. D.,
PRESIDENT OF COLUMBIA COLLEGE.

NEW-YORK:
D. APPLETON & COMPANY, 200 BROADWAY.
1852.

PROGRESS
OF THE
CITY OF NEW-YORK,

During the Last Fifty Years;

WITH
NOTICES OF THE PRINCIPAL CHANGES
AND IMPORTANT EVENTS.

A LECTURE

DELIVERED BEFORE THE MECHANICS' SOCIETY AT MECHANICS'
HALL, BROADWAY,

ON 29TH DECEMBER, 1851.

BY

CHARLES KING, LL. D.,
PRESIDENT OF COLUMBIA COLLEGE.

NEW-YORK:
D. APPLETON & COMPANY, 200 BROADWAY.
1852.

P R E F A C E .



MANY applications having been made to me for copies of this address—and some interest having been expressed that it should be put into a more convenient and permanent form than that of a newspaper—I determined to reprint it from the *Tribune* where it appeared, and have taken the opportunity thus presented of adding some passages and notes prepared since the lecture was delivered, without omitting any that were then given.

It is a theme upon which, with more time, much more might be said—but such as it is, this memorial of New-York may have interest at least for its own residents.

C. K.

March 2, 1852.

LECTURE.



THE subject to which I wish to ask your attention this evening, is *The City of New-York, and its progress during the last fifty years*. Born myself in this City, and identified with it through all that period, by interest, association and affection, I very cheerfully acceded to the suggestion made to me by the Committee at whose instance I am here, to take New-York for the topic of my lecture.

You will readily apprehend that the difficulty in treating this topic lies not in the scantiness but in the superabundance of materials ; and, with all my efforts to avoid what would be inevitable—if any thing like a detailed enumeration were attempted of the manifold proofs and illustrations of the City's growth and progress—the dryness and formality of a mere journal or record, I yet fear that I may fail to interest my hearers in what, nevertheless, is a most interesting theme. Without further preface, I enter at once upon it.

It is now 237 years since the passengers of a Dutch emigrant vessel landed on the point of the Battery, and laid the foundation of this proud and populous City. On its struggles, its vicissitudes and its triumphs, from that period to the commencement of the present Century, this is not the place nor the occasion to enlarge.

Passing at once to the year 1801, we find that feeble Dutch settlement already a goodly City, numbering about 61,000 people ; and then entering fully upon the career of commercial greatness, which—favored by the wise national policy of Washington, and stimulated by the enterprise of intelligent freemen, whose own strong arms had, under the favor of Heaven, achieved the independence of their country—has gone on increasing, and to increase, so long as the descendants of those freemen shall be true to the character of their fathers, and to the glorious institutions bequeathed to us, their successors.

In this City had assembled the first Congress under the Constitution. In its ancient City Hall—then standing where the Custom-House now stands, at the head of Broad street—the Constitution had been accepted and sworn to by George Washington, the first President under it ; and here the new Government was organized and set in motion. At the close of the second session of the First Congress, in December, 1790, the seat of Government was transferred to Philadelphia ; and New-York, happily for her interests, was left to her own resources, and to the commercial pursuits especially for which her natural position and advantages are so great, without the frail and perilous dependence upon the too often corrupting patronage and expenditures of a Seat of Government.

The city in 1801 numbered seven Wards. Edward Livingston, since so renowned as a jurist and a statesman, was then the Mayor. Broadway, as a street, at that time terminated at Catharine street, now called Anthony street ; and beyond was a hill-country, sloping on the one side to the fresh-water pond, or the Kolck, on the east, and to the lowlands of Lispenard's Meadows on the west. The limit of habitations, or streets in which there were buildings, was, on the North River, Harrison street ; on the East River, Rutgers street ; with very large spaces between, on which were no dwellings. The houses on Bowerie

Lane—as was the early designation of that wide and noble avenue—furthest out of town, were near Bullock street, now Broome street ; and on either side of these houses was an open space to each river of cultivated grounds and orchards.

The outside street on the west side of the town was Greenwich street from the Battery up to Cedar street. There the encroachments upon the river had snatched from the waters, in the true spirit of our Dutch ancestors, the commencement of another street, now Washington street, and it extended, only partially built up on one side, to Harrison street, where the waves still broke upon the natural breach.

In Greenwich street, on the west side, near Morris street, stood, in 1803 and long after, a circular building, which had been used as a Circus by Rickett's Company ; and but few houses existed on the west side of the street, between the Battery and Rector street. The water came up to the street, and boys bathed there. Greenwich street, from the Battery to Courtlandt street, was paved for the first time in May, 1802. In the fall of 1801, as late as October, the Yellow Fever reappeared in the City, but it lasted only about a fortnight.

A respected friend, then and now a resident of New-York, has furnished me with some very interesting recollections as to this early period, which (being then abroad with my father, who was Minister at the Court of England) I cannot speak about from personal knowledge. "In winter, we resided," said he, "at the time, 1802, at No. 125 Pearl street, formerly occupied by the Bank of New-York, and at Judge Lawrence's house during the summer. This summer-house stood on the line of Division street, and on the block now facing Grand street between Willet and Pitt streets. Col. Willet's country-seat—that house yet stands—laid a little to the northeast : and Wm. Laight's, on the bank of the East River, was directly in front of us—a lux-

uriant growth of clover flourishing in his back lot. From this residence I became familiar with Broadway above Anthony street. It was then called the Middle Road. At Anthony street rose a hill, on the top of which, on the west side, was a two-story frame house with brick front, which, with a basement afterward built under it, was pulled down only last year. On the east side, a two-story house, occupied in summer by Col. Barclay as a country-seat. This house, with stories and cellar built under, is that occupied by Cornelius W. Lawrence, Esq., during his Mayoralty, and still stands, next, I believe, to the Carlton House in Broadway. Beyond these houses was a steep descent to a stone bridge of one arch, over the outlet of the Kolck, at Canal street. North of the bridge was a sharp, high hill; and thence the ground fell rapidly to the middle of the space between Broome and Spring streets, where was a pond, through which the Middle Road was filled up and prolonged. On the east side thereof, was a high bank, studded with apple trees. Eastward from this, stood Bayard's house and garden, occupied by Delacroix, as Vauxhall Garden, far below the site of the present Vauxhall. On the west side of the Middle Road, above what is now Bleecker street, John J. Astor had a country residence; and beyond him again, Wm. Neilson." These, I may say, were yet country residences till after the close of the War of 1812. At the earlier period of 1801, a pale-fence stretched across Broadway on the Middle Road, at about Astor Place—there beginning the farm of Randall, which constitutes, by a most noble bequest, the endowment of the Sailors' Snug Harbor.

Many who hear me will remember the sandy hill, which intercepted the line of Broadway, upon which stood the mansion-house of Capt. Randall, long occupied by a respectable citizen, James Farquhar, a fine old-fashioned gentleman, who formed the taste of so many young gentlemen of his day to wine and dancing, for he was a standing

manager of the assemblies, and a seller of wine yet notable. It was not till many years later, that Broadway was cut through this sandy hill and the garden of Mr. Brevoort, which laid beyond it; and where now stretch away, in endless lines, elegant houses and noble squares, and paved and gas-lighted streets, the cows grazed, and the industrious gardener planted his cabbages. To the growth of the City and the necessities of that growth, no obstacle has been found insuperable. The face of the earth, uneven and rocky, has been levelled to a gently sloping plain. Streets have been prolonged, straightened, widened, and sometimes cut out anew, regardless of expense, and regardless, too, of old associations and cherished attachments. Graveyards, those populous cities of the dead, have not been sacred from the hand of Improvement or the foot of Progress; and churches, erected as the Romans planted trees, "for posterity and the immortal gods," have been overturned, or, like our present Post-Office, given up to secular uses. In respect to the churches, it will surprise probably even those who have been observing lookers on, to learn how many have risen and disappeared, or been perverted from their purpose, within the last half-century. To begin with the instance just referred to, the Post-Office: The Middle Dutch Church was one of the oldest and best endowed churches in this City, and in its graveyard, and the vaults around the edifice, reposed many of the descendants of the first inhabitants. When the building was turned over to secular uses, these remains were again made "to revisit the pale glimpses of the moon," and were transferred to newer resting-places, whether to be more permanent, the future must decide. The oldest Dutch Church, that which stood in Garden street, of which even the name, and almost the memory, have already disappeared, was demolished within the last thirty years, to make a place for warehouses and banks. In Cedar street, near the junction of William street, was built, about 1808-9, a fine and spa-

cious church edifice for Rev. John B. Romeyn, a clergyman of much reputation for eloquence and piety at that day, and who had drawn around him a congregation of wealthy and respectable people. It was a colony, so to speak, from the old Wall street Church, and the animated sale of its pews at rates very high—the first occurrence of the kind upon a large scale—both attested the favor in which the preacher was held and put him in possession of a church free of debt—an inestimable advantage for clergymen and churches, not less than for men of other vocations and for public institutions of secular aims. But the Cedar street Church and its Wall street parent have both disappeared; the former totally, and without leaving a sign—the latter, after being rebuilt and enlarged, was, about fifteen years ago, taken down and transported, piece-meal, and now stands, stone for stone, across the Hudson, in Jersey City, still a temple to the living God. The graveyard around the Wall street Church was broken up, its vaults emptied of their unconscious dead—happily unconscious, or they might well, in the imprecation of the Bard, have exclaimed—

“Leave us, oh! leave us to repose,
 Nor further seek our merits to disclose,
 Nor draw our frailties from their dread abode;
 (There they alike in trembling Hope repose,
 The bosom of our Father and our God.”

And now we find there the offices of California Expresses and Lightning Telegraphs—as little dreamed of by those upon whose graves they stand, as that those graves themselves would ever yield up their dead but at the last great summons. Older even than these, was the first Jewish Synagogue of Sheareth Israel, which stood a little retired from Mill street, between Broad and William streets. It has vanished, and so has the street, too. About the year 1803, Trinity Church commenced the building of a Chapel in

what was then most emphatically the very uppermost part of the City, now known as Hudson Square. The building (St. John's) was not finished till 1807. Perhaps no more striking illustration of the change in the aspect or physiognomy of the City, and in the value of its soil, can be adduced, than by a quotation from the very interesting historical work on Trinity Church, by the present estimable Rector, Rev. Dr. Berrian. Referring to the site of St. John's Church, he says : "This was on the very verge of a place as unsuitable as possible for a substantial edifice. It was probably in view of this difficulty that the Vestry made an order in the following year (1804), that the Committee of Leases should have the pond filled up on the east side of Lispenard's garden, which was in the immediate neighborhood of the situation proposed for St. John's Church. Indeed, it would be almost incredible to persons of the present generation to hear, from those who are older, their recollections of the past in regard to this quarter of the City. It was a wild and marshy spot of no inconsiderable extent, surrounded with bushes and bulrushes ; in winter a favorite place for skaters, and at certain seasons for gunners ; and where, in my boyhood, I have seen snakes that were killed on its borders. Indeed, even in 1808 it was only so partially filled up and reclaimed by the elevation of the grounds for the courses of the streets, and the consequent multiplication of ponds in various directions, as to have been the occasion at night of many a sad disaster."

As to the change in value of this property, the reverend author adds : "A curious anecdote was related to me by an old and respectable parishioner of Trinity Church (the late David Lydig), that an uncle of his (David Grim), who was a Trustee of one of the Lutheran churches in this City, and who was fond of antiquarian research, in looking over the former minutes of the Board, found an entry to the effect that some well-disposed individual had offered to the Trustees of the Church a present of a plot of ground,

containing about six acres, near to the head of Canal street and Broadway. They passed a resolution, however, that it was inexpedient to accept the gift, inasmuch as the land was not worth the fencing in."

Although considerably antecedent in time, I may introduce here a yet earlier illustration of the little estimation in which our progenitors, especially the early Dutch settlers, held the lands in the centre of the island. At a point a little beyond the north side of Union Square, terminated the sand hills and sandy soil, which was succeeded by hard clay, and, further on, by a long, unbroken upheaval, as it were, of sterile, forbidding, gloomy gneiss rock, which extended through the centre of the island as far as Harlem Commons. The early Dutch settlers, the Suydams and the Van Dams, the Stuyvesants, and the Ten Broecks, and the Hardenbroecks, the Van Cortlandts, the Waldrons, the Schermerhorns, all settled along the shores of the rivers, where, by the washings of the upland, some soil for their farms and gardens was to be found. For these settlements they took out patents; but would not go to the trifling expense of a patent for any of the rough and broken soil of the interior. Hence the island was literally surrounded with settlements as far as Harlem, while its interior was bare and unoccupied until as late as 1772. Just before the struggle for independence, the whole of those waste unpatented lands was conveyed by act of the Legislature to the Corporation of the City of New-York, as of little value indeed to any one, but still as needing some looking after. This sterile, broken tract, is now pierced by the Fourth, Fifth, and Sixth Avenues, dotted with most luxurious private abodes, and adorned by the noblest institutions of beneficence—the Institutions for the Deaf and Dumb, the Blind, and the Orphan.

St. John's Church still stands, though now as far below the centre of population as, when built, it was beyond it. But another Church, constructed by Trinity at a later pe-

riod, after a flourishing existence of some forty years, has disappeared, to be replaced far, far up-town from its original locality, by a more splendid edifice. I refer to Grace Church. This was commenced about 1805, on ground belonging to the Lutheran Church, but then occupied by a public house, on the corner of Broadway and Rector street; the ground was purchased, and the church was built by Trinity Church, and presented to the congregation, which was then organized in Grace Church. It may be doubted whether there survives at this day, a single one of those who were then of the Vestry of Trinity Church, or of the first Vestry of Grace Church.

The Scotch Presbyterian Church, in Cedar street, between Broadway and Nassau street, in which the eminent and eloquent clergyman, Dr. John M. Mason, officiated, was pulled down after the War of 1812, and replaced by a new edifice in Murray street, opposite the College ground. In the march of improvement, shall I call it?—at any rate, in the course of events, that church, too, has disappeared, and its site is now occupied by dwelling-houses.*

The French Church du St. Esprit, founded by pious Huguenots, and endowed liberally by the Desbrosses and others, stood in Pine street, below Nassau street. In 18— it was demolished, and a new marble church was built, from the proceeds of the sales of the lots in Pine street, at the corner of Church and Franklin streets, where it now stands.

Old Trinity, too, which was built in 1788—being the second on the same site—the first, which was founded in 1696, having been burned in the great fire which deso-

* The materials of this church in Murray st. were used to build a church in Eighth st., facing Astor Place, which, after serving as a Presbyterian Church, was sold and became an Episcopal Church; then a Swedenborgian Temple, and now, as I learn since this address was delivered, has passed into the hands of the Roman Catholics, having been purchased by Archbishop Hughes—almost enough to make the bones of that sturdy Calvinist, the Rev. Dr. J. M. Mason, turn in their coffin.

lated New-York in September, 1777, has been superseded by the most beautiful church structure, probably, of modern days. The old church was demolished in 1839; the present edifice was commenced immediately, but it was not finished and ready for consecration until May 21, 1846. Its cost, exclusive of organ, clock, bells, &c., was \$337,994; to which about \$20,000 was added for cost of organ, clock, iron railing, flagging, &c.

It would be tedious to attempt the enumeration of all the church edifices which have sprung up within the half-century. The result will be more striking by the simple statement that, in 1801, the number of churches, meeting-houses of all denominations, and synagogues, in the City, was 32; in 1851, there are 260.

For many years past the burial of the dead in the lower part of the City has been prohibited, and hence the early burial-grounds were abandoned, and few only of them have been held sacred from the grasp of the speculator. It is honorable to Trinity Church that the large yards around it, and its Chapel, St. Paul's, have been preserved from Vandalism, and yet retain the memorials of the by-gone generations which rest in their bosoms. The old Potters' Field, now Washington Square, was not called to give up its nameless and numberless dead; but on their unconscious remains were piled acres of sand, carted down from the elevation of Broadway, and of the other higher grounds in the vicinity; and the fine houses which now surround the square, and the flourishing trees which adorn it, cover the dust, far down, which once was breathing, living man.

Of remarkable buildings which have disappeared since the beginning of the century, we may mention again the old Federal Hall, that stood till after 1812. Within its walls my first vote on attaining to manhood was given, in 1810. The foundation of the present City Hall was laid in 1803; and it is in striking contrast with the lavishness of such

ceremonials at the present day, that the appropriation for the whole expense was only \$50. The building proceeded very slowly, and it was not finished till 1812, at a cost of \$583,734.

Another edifice of note was the Government House, which stood on an eminence at the foot of Broadway, south of Bowling Green, where now is a range of fine brick houses. The house was a large double brick building, with a showy portico in front, to which the ascent was by many steps; the apartments were many and spacious, and the yard and garden behind extended to Bridge street, and occupied the whole block bounded by State street on the west, and by Whitehall street on the east. After 1814, this building, having long been used as a Custom House, was torn down, and the lots on which it stood, and its garden, were sold; thus giving place to the private residences which front the Bowling Green, and the Battery on State street as far as Bridge street.

The old City Hotel in Broadway, between Thames and Liberty streets, built toward the close of the last century—for more than fifty years the most noted house of entertainment in our City, and of which the assembly room, with its double floor most skilfully adapted to dancing, had witnessed the festive enjoyments of several generations—has disappeared within the last two years. Expensively constructed and substantial warehouses now occupy its place; and yet methinks the genius of the past might haunt it still; and as the midnight, careworn votary of commerce toils over his weary task, there may break on his startled ear the accents of other days and other scenes—the faint echoes of long-ago-uttered harmonies—the ring of laughing, joyous, innocent youth—perhaps of the fervid, trusting words of plighted love—perhaps, too, of the fierce and menacing tones of jealous rivalry—for of all these, and more than all these, was that ancient, honored, much-loved spot cognizant. These are day-

dreams. I look again, but the illusion has vanished, and Mammon remains, the only grim but mighty reality.

Another pleasant haunt, which I well remember, has disappeared too, though its then owner, Laurie Todd, or Grant Thorburn, survives, like Old Mortality, to freshen the inscriptions of buried races. It was the Friends' Meeting House, standing a little back from Liberty street, between Broadway and Nassau street. This, our ingenious little Scotsman had converted into—why not say, had continued as—a temple of nature and of God?—where he dealt in seeds and grains, which in their produce gladden the earth; and had collected for himself and for the enjoyment of others, rare and beautiful plants, and rare and beautiful natural songsters, the Jenny Linds and Catherine Hayeses of the fields and the woods—sweet birds, whose untiring throats have no colds, nor laryngitis, nor other human obstacles to the perpetual flow of that incense to the Creator, which the song-bird ceases not, in captivity or in his native freedom, to pour forth. Again Mammon displaced the seeds, the plants, the song-birds, and Laurie Todd, and broke up this pleasant haunt of nature-loving citizens, who only there could catch a glimpse of her beauties or an echo of her voice.

But I am running ahead of my subject. Let us get back to 1806, from which dates the era of steam applied to navigation, and the great discovery—for the successful application of a known force in a new manner, and to new and before unthought-of purposes, may justly be styled a discovery—belongs to our City, of which Fulton was a resident, and from which the first boat—the Clermont—started for Albany on the 7th day of August, 1807. An hour might be readily occupied with a recital of the hopes and the fears, the almost angry doubts and passionate sneers, with which the announcement was received, that a boat without sails or oars was to be forced up the Hudson to Albany, against wind and tide, in a shorter time than

was ever dreamed of, and all by the vapor which the housewife's tea-pot sends curling into the air, to vanish in an instant from sight. For, at that time, steam engines, as applied to the various processes of manufacturing or other industry on land, were little known generally, and the whole United States furnished, it is believed, but one machine shop or foundry where a steam-engine could be made, and that was opposite to this City, at Hoboken, in the works of Colonel Stevens, of whom more anon.

But the *Clermont*, in the sight of a jeering* rather than encouraging crowd, got under way, and slowly, very slowly, as we now estimate speed, forged ahead; Robert Fulton and a few chosen friends and faithful mechanics only on board—for he refused to take passengers generally, only consenting, after much solicitation, to take six, of whom the late Selah Strong was one, and perhaps the first man who ever paid for a steamboat passage up the Hudson.

In 32 hours, running time, after stopping one night at the seat of R. R. Livingston, the *Clermont* made her appearance at Albany, having received on her fiery track along the river, abundant manifestations of interest, astonishment, and even terror—and thereby securing the monopoly promised by act of the Legislature to any persons who should accomplish the distance by steam between Albany and New-York at a given rate of speed.† The return trip was made

* In a letter to his friend, Joel Barlow, relating the success of this first trip, Mr. Fulton says: "The morning I left New-York, there were not, perhaps, 30 persons in the city who believed the boat would move one mile an hour, or be of the least utility; and while we were putting off from the wharf, which was crowded with spectators, I heard a number of sarcastic remarks."

† As early as 1798, Chancellor Livingston memorialized the Legislature for an exclusive privilege to navigate the waters of the State by steam—believing himself then to be in possession of a mode of applying steam successfully to navigation.

The Legislature complied, and in March, 1798, granted to Mr. L. such exclusive right for the term of 20 years, on condition that within twelve

in 30 continuous hours, averaging five miles an hour. The engine of this boat was made in the workshops of the famous Watt, at Birmingham.

It is a memorable proof of how little was then anticipated from this great discovery, that the chief commercial newspaper of that day (*Lang's Gazette*) makes no allusion whatever to the great event, as now we must call it; and that, out of five or six daily papers published in the City, one only (*The American Citizen*, edited by an Englishman—Cheetham) referred to the vessel when about to take her departure, and published on her return the short and* modest letter in which Robert Fulton related the occurrences and result of the trip. Yet in the columns of these same papers, abundant space was given up to party recrimina-

months, he should produce a boat, whose mean progress should not be less than *four miles an hour*.

Mr. Livingston built a boat forthwith, but it failed, and the law remained in abeyance. But after the encouraging, though not wholly successful experiments made by Fulton with Chancellor Livingston's aid in France, the Legislature, at the instance of Mr. Livingston's friends, on 5th April, 1803, renewed the law of '98 in behalf of Livingston and Fulton, for 20 years—allowing two years, which time was afterward extended to 1807—for producing a boat which should move at the rate of *four miles an hour*, with and against the ordinary current of the Hudson.

The Clermont, or as she was afterwards called, when enlarged, "The North River"—just saved her distance, both as to time and speed.

* Our readers will like to see Mr. Fulton's modest letter reprinted.

To the Editor of the American Citizen.

SIR:—I arrived this afternoon at 4 o'clock from Albany, in the steam-boat. As the success of my experiment gives me great hopes that such boats may be rendered of great importance to my country, to prevent erroneous opinions, and to give some satisfaction to the friends of useful improvements, you will have the goodness to publish the following statement of facts:

"I left New-York on Monday [7th Aug.] at one o'clock, and arrived at Clermont, the seat of Chancellor Livingston, at one o'clock on Tuesday—time 24 hours, distance 110 miles. On Wednesday, I departed from the Chancellor's at 9 in the morning, and arrived in Albany at 5 in the afternoon—distance 40 miles, time 8 hours. The sum is 150 miles in 32 hours—equal to near five miles an hour.

On Thursday, at 9 o'clock A. M., I left Albany, and arrived at the Chancellor's at six. I started from there at 7 o'clock, and arrived in New-

tions and the fleeting and perishable interests and questions of the day. Even Fulton himself was far from seeing the full value of his discovery, for the scope of his original plan was apparently to stem the current of the Mississippi and similar rivers, and thus supersede with his steam the painful and tedious ascending navigation of those rivers by poles and drag-lines.*

The palm thus gained by Fulton was closely contested by John Stevens, of Hoboken, who, long in concert with R. R. Livingston† had made experiments in steam as a means of propulsion, but now, aided by the genius and

York at 4 o'clock in the afternoon; time 30 hours, space run through 150 miles, equal to five miles an hour. Throughout my whole way, both going and returning, the wind was ahead; no advantage could be derived from my sails, the whole has, therefore, been performed by the power of the engine.

I am, your obedient

ROBERT FULTON.

* As evidence of this, the following extract from Fulton's letter to Joel Barlow, already referred to, may serve:

"It will give a cheap and quick conveyance to the merchandise on the Mississippi, Missouri, and other great rivers, which are now laying open their treasures to the enterprise of our countrymen."

This incredulity seems less extraordinary in view of the fact, that a Society in Rotterdam having applied to the American Philosophical Society, at Philadelphia, for information as to whether any improvements had been made in the construction of steam-engines in America, the subject was referred to Mr. *B. H. Latrobe*, who made his report to the Society on 20th May, 1803. After stating failures in various ways of attempts to propel boats by steam, the report thus decisively proceeds:

"I am well aware that there are still many very respectable and ingenious men, who consider the application of the steam-engine to the purposes of navigation as highly important, and as very practicable, especially on the rapid waters of the Mississippi, and who would feel themselves almost offended at the expression of an opposite opinion; and perhaps some of the objections against it may be avoided."—*Trans. Am. Phi. Soc.* vol. 6, pp. 90-91, *first part*.

† It was stated in the Address when delivered, that the experiments were made in concert with R. Fulton, as well as Chancellor Livingston, but I have since ascertained that Col. Stevens's acquaintance with Mr. Fulton began only after that gentleman's return from Europe in 1803 or 1804.

practical mechanical skill of his son, R. L. Stevens, was operating separately. Almost simultaneously, but yet *behind* by that *fatal* quarter of an hour which determines the fate of so many enterprises, and of so many human beings, both men and women, Mr. Stevens produced, independently of Fulton's plans and experiments, his steamboat Phœnix; but, precluded by the monopoly which Fulton's success had obtained for him of the waters of New-York, Mr. Stevens first employed her as a passage boat between this City and New-Brunswick, and finally conceived the bold purpose of sending her round to Philadelphia by sea; and he executed it successfully. His son, Robert L. Stevens, went round with the boat in the month of June, 1808. A fierce storm overtook them. A schooner in company was driven out to sea, and was absent many days, but the Phœnix made a safe harbor at Barnegat, whence, when the storm abated, she proceeded safely to Philadelphia, and plied many years between that city and Trenton. Mr. Stevens thus earned indisputably the honor of first venturing and succeeding to encounter the might of the ocean with a steam-propelled vessel. When the Phœnix went round to Philadelphia, the Atlantic, and no other sea, had ever known the domination of victorious steam. Even now, when our magnificent steamers, exceeding in dimensions line-of-battle ships, go and come with the regularity of mail-coaches on a beaten turnpike road, this first daring conception of trusting to the ocean a frail craft, with nothing but steam for her means of safety and progress, may recall the lines of the Roman lyrist:

Illi robur et æs triplex
 Circa pectus erat, qui fragilem truci
 Commisit pelago ratem,
 Primus.

Cased was his breast in triple brass and oak,
 Who first old Ocean's storm-tossed surface broke
 With his frail bark.

From these beginnings, the progress of steam, and the prodigious acceleration of speed now obtained, would afford most gratifying details for examination, if our time and proper scope allowed. But we must—almost as if steam-driven—hurry on.

The limit, the utmost limit of speed, to which Fulton hoped or thought it possible to attain, was seven* miles an hour, and that he, in later boats, accomplished; but it was again reserved for the name of Stevens, in the person of Robert L. Stevens, after long and numerous experiments cautiously conducted and tested, as to the form of vessel best calculated to overcome the resistance of the dense medium through which it was to make its way, to send forth on the Hudson—the monopoly law of the State of New-York having meanwhile been overruled by the Constitution of the United States—a boat as superior in size and equipments as in speed to all before it, and to travel at the rate of $13\frac{1}{2}$ miles per hour. Even that is now slow, and the 150 miles which separate us from Albany are passed over by steamboats—not one but many—in eight or nine hours; and the actual rate of nineteen and even twenty miles has been attained by some of the river boats. But when the New Philadelphia, R. L. Stevens's boat, in 1814 started forth at the rate of $13\frac{1}{2}$ per hour, even the senses were distrusted, philosophy, which had calculated only the resistance of the medium to the forms then usual, was at fault, and what had been actually done was pronounced impossible. But the steady, far-reaching mind of the younger Stevens knew the secret of his success—that it was due to the form he had given to his vessel. He saw too, after some trips, that even that form was far from the perfection he had designed, and accordingly he went to Brown and Bell, then, and even yet I believe, eminent ship-

* In his patent Fulton names six miles an hour as the limit he expected to attain, but in letters and conversation he spoke of *nine* as possible.

builders, and begged them to put on the New-Philadelphia a long, sharp, false bow, of which he gave them the drawings. After considering the proposition, they declined, declaring themselves unwilling to encounter the ridicule of what struck them as so unseemly a work, and Mr. Bell added that it would be called Bell's nose, and would be the general laughing-stock. Repulsed, but not disconcerted, young Stevens, sure of his own conclusions, built a false bow, at his own shop, put it on, and obtained in consequence an additional speed of several miles the hour. With the New-Philadelphia commenced the first day line to Albany. This was the commencement of the new models, which, alike in clipper steamers and in clipper ships, have given to both classes of our build and navigation—for there is a great deal, too, in the latter—our superiority over the world.

And here let me expatiate a little upon the service to the Mechanic Arts, and consequently to the welfare of humanity, of the family of Stevens, resident during the half-century among us. We have seen that by the lucky quarter of an hour, Fulton carried away from Stevens the prize of the first successful steamboat. But years before, viz., 1804, Col. Stevens, whose fertile and ingenious mind was specially turned to mechanical inventions, had constructed and put into operation a steamboat of which the motive power was a propeller, *the* propeller which at this day I believe is admitted in form and proportion to be the best. This boat was a small one. In it Col. Stevens put an engine with tubular boilers, the first ever made, now universal in locomotives. The machinery, made under his own direction and in his own shop at Hoboken, set in motion two propellers of five feet diameter each, and each furnished with four blades having the proper twist—to obtain which he had the greatest difficulty with his workmen—and set at an angle of about 35 degrees. This vessel—used only for testing the possibility of steam-navigation

—so completely demonstrated the fact, that Col. Stevens applied it on a larger scale in 1806, to a pirogue, 50 feet long, 12 wide, 7 deep—which attained very considerable speed. Encouraged thereby, he commenced the Phœnix with side-wheels, to whose success allusion has already been made. It is proof of the remarkable accuracy and mechanical skill of the Hoboken workshop, that the engine of the first small propeller, carefully preserved, was set up again, not more than seven or eight years ago, in a new vessel, and, without altering a screw, worked most successfully. The old hull and the blades of the propeller are yet in existence at Hoboken.

Not the least useful purpose to which steam was applied about these times, was to the ferry-boats which dart at all hours across the rivers separating at once from, and binding us to, the shores opposite our Island. The noble estuaries which constitute our City so emphatically *The Bride of the Seas*, too precious for, and too constantly vexed by, the keels of commerce to admit of bridges as a means of connection, would really have isolated us from the regions around, but for the happy and timely application of steam to navigation. I address many, doubtless, who remember the comfortless row-boats, or the more comfortless pirogues, which alone, until after the year 1810, afforded the means of crossing man or beast to Long Island or to Jersey City. The first step in advance was the introduction of horse-boats—twin-boats, with the wheel in the centre—set in motion by a sort of horizontal tread-mill wheel on which horses were made to step. For horses, steam was substituted; first by Fulton at the Fulton Ferry. Then came the single boats, with side-wheels, and propelled by steam, of which the first was the Hoboken, by R. L. Stevens, in 1822. She is still at work, much enlarged and sound as ever, and much faster than at first. As indispensable to the new ferry-boats, came—of Fulton's devising—the floating bridges at the ferries which rise and fall with the tide,

aided by counterbalancing weights on shore ; an invention ingenious in itself, and, as I have said, the indispensable complement of steam ferry-boats. 'The spring piles now used to deaden the force of the blow as the boat approaches the ferry, and to direct her course aright, are due to Robt. L. Stevens, who introduced them in 1822.

And here I must record, though I cannot enter into any details, that as we were the first to witness the success of river steamers, so were we to originate ocean steamers. In the year 1818, the *Savannah*, a New-York built ship, with side wheels and propelled by steam and sails, went hence to St. Petersburg via Liverpool, and returned safely ; and a year later, the *Robert Fulton*, built by Henry Eckford, under the superintendence of Jasper Lynch, for David Dunham, plied as a steam packet between this city and New-Orleans ; but, the business not paying, her engines were taken out and she was sold to the Brazilian Government as a ship-of-war, being of 700 tons. I have here a memorial of this ship, as it were from the grave. [The lecturer here unrolled and exhibited to the audience, a colored drawing of the *Robert Fulton*, made in 1821—deposited under one of the marble columns erected that year at the South entrance of the Park, and disinterred, uninjured, in 1848, when those columns were removed.]

Next in succession among the operative causes of our growth, as connected with steam, was its application to land carriage, and soon the railroad and the locomotive were constructed to soothe and to satisfy, as far as that *can* be done, our national go-ahead spirit. And here again New-York was the point whence proceeded the first railroad enterprise, which was to connect this City with Philadelphia, by the Camden and Amboy Railroad, in 1831 ; and here again Col. John Stevens claims our admiration and gratitude. He had clearly worked out in his own mind, long before any locomotive was constructed in Europe, the theory of such an application of steam, and the

actual form in which it could be advantageously made, as well as the cost of constructing and working a railway for the use of locomotives. Long before any experience existed to justify his anticipation, he said and published that there was no limit to the speed of a locomotive on a rail, but the strength of the materials; that it might easily be made to run as fast as a pigeon could fly; and it is one of the striking incidents connected with the opening, or the early use of the Camden and Amboy Railway, that a flock of pigeons which had settled on the track, being disturbed in its approach by the rapid engine, took wing in the direction of the track, and that one of them, attempting to cross in front of the car, was struck down by it; thus most literally verifying the prediction, that the locomotive would equal in velocity the pigeon's flight.

Since this address was delivered, I have succeeded in finding among the bound pamphlets of the Society Library, a copy of the very remarkable pamphlet upon "Railroads and Steam Carriages," published by Colonel Stevens, in May, 1812, and I cannot refuse myself the pleasure of briefly stating its purport here—briefly, I say, as I am gratified in being able to add, that the sons of that great benefactor of his country—themselves not without large claims to its gratitude and remembrance—are about to reprint that pamphlet, with additions and notes, which will make it a very curious as well as a very instructive publication.

Colonel Stevens, who, as has already been seen, was the inventor of the tubular boiler, as far back as 1804, and who had been an experimenter in steam, as a motive power, both on the water and the land, as far back as 1790, became so thoroughly convinced of the superiority of railways to canals, for internal communication and the transportation of passengers and produce, that when, in 1810, the project of connecting Lake Erie with the Hudson was so seriously discussed, as to lead to the appointment by the legislature of

commissioners to examine the routes, and report upon the feasibility of the work, Colonel Stevens, after seeing their report, which contemplated a continuous inclined plane from the lake to the river, to be fed in its whole length by the waters of the lake, earnestly pressed upon the commissioners, as preferable alike in economy, speed, and rapidity of construction, a system of railways adapted to steam carriages. This was the origin of the pamphlet to which we are referring, which is in fact little else than a copy of his memorial to the canal commissioners, with their objections and his rejoinder, preceded by a preface, in which Colonel Stevens sets forth his motives for the publication, and the grounds and extent of his faith in these then untried ways and carriages. Having failed to convince the New-York commissioners, he thus enforces the *national* advantages of his projects :

“So many and so important are the advantages which these States would derive from the general adoption of the proposed railways, that they ought, in my humble opinion, to become an object of primary attention to the national government. The insignificant sum of two or three thousand dollars would be adequate, to give the project a fair trial. On the success of this experiment, a plan should be digested, a general system of internal communication and conveyance be adopted, and the necessary surveys be made for the extension of these ways in all directions, so as to embrace and unite every section of this extensive empire. It might, then, indeed, be truly said, that these States would constitute one family, intimately connected and held together in bonds of indissoluble union.”

This remarkable paper then proceeds to estimate the great fiscal advantages to the federal government from the estimated tolls to be derived from these roads, which, while so light, in comparison with the actual cost of transportation of merchandise and passengers, as to secure a preference, would in the aggregate, constitute a large revenue.

The practicability of commencing the work, and carrying it on upon many distant points at once, with a view to their ultimate connection, is also clearly pointed out; and then comes this distinct—and when it is considered that there existed not in the world, at that time, railways and steam carriages, such as had been shadowed forth—and truly wonderful *prophecy* of the speed which could be attained by locomotives on railways:

“But there remains another important point of view in which this improvement demands the attention of the general government—the celerity of communication it would afford with the distant sections of our wide-extended empire, is a consideration of the utmost moment. *To the rapidity of the motion of a steam carriage on these railways, no definite limit can be set.* The flying proas, as they are called by voyagers, belonging to the natives of the islands in the Pacific Ocean, are said at times to sail more than twenty miles an hour; but as the resistance of the water to the progress of a vessel increases as the squares of her velocity, it is obvious that the power required to propel her must also be increased in the same ratio. Not so with a steam carriage: as it moves in a fluid eight hundred times more rare than water, the resistance will be proportionably diminished. Indeed the principal resistance arises from friction, which does not even increase in a direct ratio with the velocity of the carriage. If, then, a proa can be driven by the wind (the propulsive power of which is constantly diminishing as the velocity of the proa increases), through so dense a fluid as water, at the rate of twenty miles an hour, *I can see nothing to hinder a steam carriage from moving on these ways with a velocity of one hundred miles an hour.*”

To this bold conjecture Mr. Stevens adds this note, more sagacious, even, than the conjecture. “The astonishing velocity is considered here as merely possible. It is probable that it may not, in practice, be convenient to exceed twenty or thirty miles an hour. Actual experience, however, can alone determine this matter; and I should not be

surprised at seeing steam carriages propelled at the rate of forty or fifty miles an hour."

Should it not seem that, to the teeming and enthusiastic mind of this most ingenious engineer, the actualities of railways and locomotives, which we witness now, at a distance of forty years from this prophecy, had been, as it were, revealed? Every capability, indeed, and recommendation of railways, seems to have been present to Colonel Stevens' mind—as, for instance, their military importance.

"In a military point of view, the advantages resulting from the establishment of these railways and steam carriages, would be incalculable. It would at once render our frontiers on every side invulnerable. Armies could be conveyed in twenty-four hours a greater distance than it would now take them weeks or even months to march.

"Thus, then, this improvement would afford us prompt and effectual means not only of guarding against the attacks of foreign enemies, but of expeditiously quelling internal commotions, and thus securing and preserving for ever internal tranquillity."

In the memorial to the New-York commissioners, precise calculations are made of the cost of fuel for the locomotives—of constructing the railways—which were at first to be of wood, raised on posts some three feet from the ground, so as to be clear of snow—and afterwards, when proved to be successful, to be plated with iron—and of working the whole road. These calculations are marvellously verified by the experience of this day.

But to resume the thread of our discourse.

Since that first road the number has multiplied in all directions, and such are the relations and the functions of this great City to all other parts of the Union, that, make a railroad or open a canal where you will, it must seek a connection with us, as the root of the plant will seek and find the water, in whatever direction and at whatever distance. The number of passengers and the weight and

value of merchandise and produce now poured daily into our streets by the railroads from the North and the South, the East and the West, which terminate directly here, are inestimable, and every pursuit and calling is interested in their success. Who, before the Erie Railroad became a reality, ever heard of *tons* of strawberries, the daily measure of the quantity of that delicate fruit thus brought in the season to our market; or gallons of milk reckoned by the ten thousand, the daily produce of hundreds of farms and tens of hundreds of cows, almost warm from the milking, and innocent in a great degree of the "purling brook?" And so of butter, vegetables, poultry, eggs, and all the riches of the dairy and the farm-yard, and the orchard and the garden. Think of such an incident, which only steamboats and railroads could bring about by bringing distant parts into connection with the metropolis, as that which occurred in our bay the summer before last, when the Amboy steamboat, laden on her decks and guards with baskets of peaches, then almost a drug from their abundance, passed alongside of an emigrant ship from Norway, loaded with passengers. As the vessels kept side by side for a while, and the numerous women and children looked forth wishfully upon these baskets laden with what might seem to them the golden fruit of the Hesperides—fruit which no one of them possibly had ever tasted, for they were from a region too cold for its growth—some kind-hearted person on the steamboat began to toss peaches on board the emigrant ship, and the delight with which they were caught and eaten by the emigrants was so genuine, that some dozens of hands were soon occupied in like manner on board the steamboat, and for the brief time that the vessels were abreast, a steady shower of peaches fell upon the emigrant deck. What a notion must such an accidental reception have imparted to them of the country that was to be their future home.

The locomotives first used on the Camden and Amboy

Railroad were made or constructed by Robert L. Stevens, at his works, or upon his models in England, differing in details from those in use in England. At the outset he applied a spark-catcher, though patents for like contrivances have since been taken out; and he invented and applied then, and has continued ever since, and other railways have adopted the contrivance of the guide, or cow-catcher, as it is commonly called from an incidental function it discharges, of which the wheels, easily following the curves, give a direction to the forward wheels of the locomotive, fixed on an axle slightly movable, as with the forward pair of carriage wheels, and thus enable it, without danger of flying off at a tangent, to diverge from its straight, onward, rapid course.

The invention of the Trail, which renders travelling so secure, is also due to R. L. Stevens. He went to England with the model, presented it to the engineers and ironmasters, and begged they would make him rails on that pattern, but all declined, saying that they had no machinery which could do it. He persisted, and finally obtained from Mr. Guest, a member of Parliament, and a great ironmaster, an order to use his furnaces in Wales. Mr. Stevens posted thither, wrought with his own hands at the work, but at the moment of success the machinery gave way, and he was obliged to return to London. Yet undismayed, and abating no jot of hope, he asked permission, after paying, himself, the expenses of repairing the damage to the machinery, to try again. It was given; he did try and succeeded, and gave to the world, taking no patent, that form of rail now universal on every secure road. So much for an American mechanic.*

* The extent, variety, and value of Mr. R. L. Stevens's labors and inventions in mechanics, should have more fitting commemoration than can be given in any passing notice by one unskilled, as is the writer of this, in the mechanic arts. Yet he cannot suffer this allusion to Mr. Stevens to go forth, without attempting at least to enumerate some of the many services

But after steam, or rather aided by steam, more efficient than all other causes of the wonderful growth and unparalleled prosperity of the City, was the completion of the *Erie Canal* in 1825.

and ingenious inventions and appliances of that gentleman in steam, in gunnery, and in mechanics. From the time when a mere boy, in 1804-5, he was zealously working in the machine-shop at Hoboken, up to the passing hour, he has given his time, his faculties, and his money, to what may be justly described as *experimental philosophy*, and the results have been of great public benefit. Of some of them, the following chronological record may bear witness.

1808. Hollow or concave water-lines in the bow, were introduced for the first time in the steamboat Phenix—the first steamboat that ever breasted the ocean; these lines, under the name of “wave lines,” are now, as I understand, claimed abroad as a recent English application. On the same vessel, in 1809, he first used *vertical buckets on pivots*.

1809. Suspended the projecting guard-beam by iron rods, from above—now universal in river steamers.

1813-14, the war with England being then in progress, he invented, after numerous and most hazardous experiments, the *elongated shell*, to be fired from ordinary cannon. Having perfected this invention, he sold the secret to the United States, after making experiments to prove their destructiveness, so decisive as to leave no doubt of the efficacy of such projectiles. One of these experiments was made at Governor's Island in the presence of officers of the army, when a target of white-oak, four feet thick and bolted through and through with numerous iron fastenings, was completely destroyed by a shell weighing 200 lbs. and containing 13 lbs. of best Battle powder; this solid mass of wood and iron was torn asunder; the opening made was large enough, as the certificate of the officer commanding, Col. House, stated, for a man and horse to enter.

These shells are free from the danger accompanying ordinary shells, for they are *hermetically sealed*, and suffer no deterioration from time. Some of these, after being kept 25 years, by way of proving their safety till needed and as needed, were tested by exploding gunpowder under them, and then they were taken to high places and let fall on rocks below, and all without causing them to explode. After this they were plunged into water, and then being put into the cannon were fired, and upon striking the object exploded with devastating effect.

1813. First to fasten planks and braces of steamboats (in the Philadelphia) with screw bolts, and to place diagonal knees of wood and iron inside of them.

1815. First to use steam expansively in steamboat Philadelphia.

1818. First to burn anthracite coal in a *cupola* furnace, and subse-

Eight years before this work was commenced ; and on 4th of November, 1825, the flotilla of canal boats which left Buffalo on the 26th of the preceding month, reached the City, and, escorted by ships of war, by steamboats, and

quently to introduce this fuel in fast steamers—the *Passaic* being the earliest to use it.

1822. To substitute for the heavy solid cast-iron walking-beam of steamboats the skeleton wrought-iron walking-beam (in the Hoboken) now in universal use.

1824. First to place the boilers on the guards, and to divide in steamboat Trenton the buckets on the water-wheels.

1827. First on steamboat North America to apply successfully artificial blast to the boiler furnace by means of blowers, and in the same boat to apply what is technically known as the *Hog frame*, now general in fast boats, consisting of the large timbers on the sides to prevent the boat from bending in the centre, or as it is called, being *hogged*.

1828. First applied steel spring *bearings* under centre of the wheel shaft of the steamer New Philadelphia.

1832. First to introduce in New Philadelphia perfect *balance valves*, now in general use in steamboats, which enable one man to work the largest engine with ease. In same year he used braces to the connecting rod, thus strengthening it and preventing its tremulous motion.

1832-3. Constructed a boat (between Camden and Philadelphia) capable of navigating through solid heavy ice. In the same year he constructed and introduced tubular boilers, having the fire under the bottom and returning through the tubes.

1840. Improved the packing of pistons for steam engines by using the pressure of steam instead of hemp, steel springs, india rubber, &c., to retain the metallic packing ring against the surface of the cylinder. One of these rings which has been in use on board steamer Trenton since 1840, is at this day in good order.

1841. The *Stevens Cut-off*, by means of main valves worked by two eccentrics, invented by R. L. Stevens and his nephew (for mechanical ingenuity and skill run in the blood), F. B. Stevens ; these are generally used now in the river boats and in the ocean steamers built in New-York. In the same year he invented and applied on the Camden and Amboy rail-road the double slide cut-off, for locomotives and large engines ; and improved locomotives for transporting goods, &c., by using eight wheels, and with increased adhesion was enabled to turn short curves with little friction on the flanges ; also used *anthracite* as a fuel to great advantage on the heavy engines, weighing 24 tons, with wheels of 42 inch diameter, cylinders of 18 inches, and 34 inch stroke.

1842. Having contracted to build for the United States government a

pilot boats, and all manner of water-craft, dressed in all the varieties of national flags and fancy colors, and saluted by two British sloops of war then lying in our waters, and as gayly decorated for the occasion as any of our own vessels—proceeded to Sandy Hook, where the Governor, De Witt Clinton, poured into the briny water of the Atlantic some of the bright fresh water of Lake Erie, brought for the purpose, in token of the espousals then and there celebrated of our Mediterranean with the great sea—a bridal more significant and of more far-reaching influences than the historic marriage of the Doge of Venice with the Adriatic.

To Dr. Mitchell—renowned for much and various

large war steamer shot and shell proof, R. L. Stevens built a steamboat at Bordentown for the sole purpose of experimenting on the forms and curves of propeller blades, as compared with side wheels, and continued his experiments for many months, the result of which we may yet hope to see in an iron war steamer that will be *invincible*, and so should be named. While occupied with this design he invented about 1844, and took a patent for, a mode of turning a steamship of war on a pivot, as it were, by means of a cross propeller near the stern, so that if one battery were disabled, she might in an instant almost present the other.

1848. This year succeeded in advantageously using *anthracite* in fast passenger locomotives.

1849 witnessed the successful application of air under the bottom of steamer *John Neilson*, whereby friction is diminished, and she has actually gone at the rate of 20 miles an hour; this was the invention of R. L. Stevens and F. B. Stevens. The *John Neilson* also has another ingenious and effectual contrivance of R. L. Stevens, first used in 1849, for preventing ill consequences from the foaming of the boiler. In conclusion of this dry and imperfect chronological recital of some of R. L. Stevens's contributions to the mechanic arts, to public convenience and national power, as well as renown, it must be added that Mr. Stevens is himself the modeller of all the vessels built by or for him, and that many of our fastest yachts are of his moulding; and especially the *Maria*, which beat without difficulty the victorious *America*, which in her turn carried the broom at her mast-head through the British Channel, distancing all competitors, as she continues to do, I believe, under her new owner, in the Mediterranean.

Of such a man, not the mechanics only of our city, among whom he has worked, and is well known, but the nation may well be proud.

learning and rare simplicity of character—was assigned the duty of mingling with the married waters of the Atlantic and the lakes—from bottles he had collected for the occasion—water from the Ganges and from the Indus in Asia, the Nile and the Gambia in Africa, the Thames, the Seine, the Rhine, and the Danube of Europe, the Mississippi and Columbia of North America, and the Orinoco, the River Plate and the Amazon of South America, in token of the fellowship that day established between the great interior of our country, and all the nations whose lands so many rivers fertilize. “I pronounce,” said the enthusiastic Doctor, as he concluded the ceremony—“I pronounce the connection *blessed*—for perpetual and incalculable will be its benefits.” He is long since gathered to his fathers, as are most of the prominent persons in that remarkable day’s ceremonial; but the blessing he invoked and pronounced has been fruitful beyond his utmost hopes, or the scope of the most sanguine vision of the most sanguine man who stood amid the rejoicing thousands and tens of thousands who welcomed that first flotilla from the Canal.

By the espousals of that day, the Doctor well and pointedly said, “the circumfluent Ocean was *republicanized*”—and so in fact it is, for none now will venture to claim dominion over it, or assert on it, or as to it, any rights inconsistent with that equality among nations which, like equality before the law among individuals, is one of the chief essentials of republicanism.

Of all the principal personages who took part in the pageant, how few, how very few, survive! Governor Clinton, to whom more than to any single man, more than to all other men, the success of the enterprise of the Canal is due, is among the dead—it shames me as a New-Yorker to add among the, I will not say forgotten, but the *uncommemorated* dead. He who by his perseverance against obstacles of every nature, physical, financial, and factious, steadily kept his way onward, and eventually accomplished

the great enterprise, has no monument from the City of which his labors more than doubled the population and the wealth, even before he himself had tasted of death, and which, as time rolls on, add annually, not by units nor by tens of thousands, but by millions to its wealth. The Canal, of which the 4th November, 1825, witnessed the completion, made its first payment into the State Treasury in the year 1821—a small portion only of the work being then in use—and this first payment was \$2,300. It pays this year into the Treasury more than *three millions and a half of dollars!* Thirty years have elapsed between the first payment and the last, and the aggregate poured into the State Treasury during those thirty years, exceeds *forty-six millions of dollars.* And yet again, I repeat, neither the State nor the City of New-York has erected a monument to their greatest benefactor, De Witt Clinton.*

The celebration of that Canal Jubilee was probably the most elaborate and most imposing public ceremony ever witnessed in this City. I know that it is common to speak of each celebration in turn as the finest; but I who have witnessed a great many fine pageants here and elsewhere, have never seen one which, in all its effects and moral

* A few figures, taken from official returns, will illustrate the wonderful impulse given by the Canals (mainly) to business, and to the value of property both in this City and in the State.

In 1824, the official valuation of the real and personal property of the City was \$83,075,676, being an increase of only *one million and a half* over the valuation of 1815—a period of ten years.

In 1826, the first year of open Canal navigation, the valuation was \$107,447,781, and in 1835, at the expiration of another period of ten years, the valuation was \$218,723,703, or more than double!

So of the whole State, the official valuation of the real and personal estate was, in 1824, \$269,485,625—being *less*, by \$11,769,498, than the official valuation in 1815—a period of ten years.

In 1835, another period of ten years, the valuation was \$528,376,379—again *almost* double.

In the year 1851, at the close of the quarter of a century since the canals were completed, the official valuation of the real and personal property in the State was *one thousand and seventy-five millions!!!* or *four times* greater than the amount in 1824.

considerations, and actual display on land and on water, equalled the Canal Jubilee of November 4, 1825.

It is sad to think how few, how very few, of the prominent personages on that occasion now survive. He, the chief figure, De Witt Clinton; Stephen Van Rensselaer, President of the Canal Board; Cadwallader D. Colden, the Historiographer of the Canals; William L. Stone, who, under the direction of the corporate authorities, compiled a memoir of the celebration; Richard Riker, the Recorder; Dr. S. L. Mitchell, the amiable, learned, and eccentric philosopher; the Aldermen composing the Committee of Reception, Messrs. Henry Wyckoff, W. A. Davis, Philip Hone, and Elisha W. King; William Bayard, Chairman of the Merchants' Committee; the general commanding the artillery, General Jacob Morton, of most pleasant memory, for his many kindnesses and virtues; and another general of rare qualities and discernment, whom it was my good fortune to know well, and serve with during the war of 1812, Jonas Mapes, long an honored member of this Society; Commodore Chauncey, then in command of the Navy Yard, and who entered most heartily into the celebration; the then President of the United States, who was invited but was unable to be present, John Quincy Adams;—all, all have passed from the scene. There were then living, too, three of the signers of the Declaration of Independence, Charles Carroll, of Carrollton, Thomas Jefferson, and John Adams, to each of whom, as well as to each of the surviving ex-presidents, Madison and Monroe, gold medals, struck in commemoration of the event, were presented by vote of the Corporation. Rufus King, and other men of the Revolution, and of the early days of the Constitution, were also then living, but all have long since paid the debt of nature; all, however, were enabled, as their eyes closed for the last time upon the country they had loved and served, to rejoice in the grateful conviction that they had not toiled, nor suffered, nor struggled in vain, and that they left behind them a country and institutions

abounding in prosperity and blessings beyond aught that ever before had fallen to the lot of man, and in men capable by their enterprise, foresight, courage, virtue, and intelligence, to preserve and protect those institutions.

It is a curious fact in connection with this celebration in New-York, that the intelligence of the departure of the flotilla from Buffalo, on the morning of the 26th of October, was communicated to this City by discharges of cannon, stationed along the whole line, in *one hour and twenty minutes!* That, in this day of electric telegraphs, seems little remarkable; but at that day it was unsurpassed velocity of communication. The answer was returned in like manner and in like time, so that in less than three hours Buffalo had spoken to New-York—nay, to the Ocean—for a cannon was at Sandy Hook, and received a reply. The time between Albany and Sandy Hook was twenty-one minutes.

There are many incidents connected with that celebration which it might be profitable and would be very agreeable to me personally to recall, for I was an active participator, as one of the Assistant Marshals of the day; but time will not permit it. One, however, I must mention as eminently honorable to the character of the City.

It is stated in the following extract from the Report of the Marshal-in-Chief, Gen. Augustus Fleming—yet happily among us in vigorous health, and enjoying all men's respect:—

“I reserve this place,” says the Grand Marshal, in his official report to the Corporation, “to note that during the day, a very large portion of our population passed under my immediate observation and that of the gentlemen associated with me; and it gives me great pleasure to remark, that not a solitary instance of riot or disorder of any kind was witnessed by either of us—the same good feeling that animated the procession appeared to have extended itself to the spectators. It was found necessary in two instances to remove obstructions which would impede the progress of

the large stages. The request to perform this task was made to individuals in the crowd, by whom it was immediately and carefully executed. The procession numbered 6,900 persons, with a large array of banners, stages drawn by six and eight horses, on which were trades in operation, fire-engines, &c., &c., yet the whole column passed over the prescribed route of four and a half miles, without an accident of any sort, in 2 hours and 50 minutes. [It is to be noted that there were no military in this procession, the celebration being within the period of the annual election, when troops are forbidden to parade.]

Let me add to this, to complete a moral picture of which this City may be ever proud, and the memory of which it cannot be other than beneficial to recall, that Dr. Coventry, the Mayor of Utica, and chairman of the delegations from the western part of the State, in his letter of thanks in behalf of those delegations for the hospitalities of the City, uses this language: "We have witnessed (and we confess with wonder) that an immense population may pass a day in rejoicing and festivity and exhibit a self-respect that forbade even the appearance of vice and depravity. Who in former times ever witnessed a scene similar to that of the 4th instant, without observing a single instance of inebriation or hearing a sound that would shock the chastest ear?"

It lies in my way to say that among the festivals and rejoicings consequent upon this event, was a very magnificent military and civic ball at the Lafayette Theatre, of which, I suppose, few among my hearers remember the existence—a half-theatre, half-circus in Laurens-street, near Canal. It has vanished away, as have other theatres—one which stood on the present site of Christ's Church in Anthony street, in which the elder Kean first appeared in this country; and the old Park, which, after being twice destroyed by fire, has now given place to the demands of commerce, which is tending so rapidly up Broadway. Indeed, there are few more remarkable changes than the

change in the place of business during the last ten or twelve years.

The Bank of New-York, and the first Branch Bank of the United States, built and entered upon their banking houses in Wall street, in 1800, and that, together with the existence of the Tontine Coffee-House lower down, then the rendezvous of the merchants, and used as the Exchange,* fixed that street as the Lombard street of our London, and so it continues, so it will ever endure—for all private residences, of which it was mostly made up, within my memory, have yielded to the demands of Mammon, and been converted into his temples. Business, therefore, formed itself upon that street as an established centre.

Pine street, in like manner, which, until after the peace with England in 1815, was the abode of distinguished merchants and lawyers, where Jno. Wells, and Thomas Addis Emmet, and D. B. Ogden, and Samuel Jones, and the Radcliffs among the lawyers, and Oliver Wolcott, and Jonathan Burrell, and others of merchants and financiers resided, has been entirely demolished and rebuilt, in some instances more than once since that period, and now not a private dwelling remains in it; nor between Pearl street and Broadway, a single building that stood there in 1815. Pearl street, which up to the time of the desolating fire of 1835, concentrated almost all the great dry goods and jobbing establishments, has lost its favor, and Broad street, and Beaver street, and Broadway from the Battery to Canal street, have become its rivals and successors. The in-

* It is not without interest, as marking a change in manners, to add that twelve o'clock was then the hour of "high 'Change," and that one of the customs among the frequenters of the Exchange, seldom "honored by a breach" at that day, was to take a glass of punch with a chunk of raw codfish and sea biscuit, by way of nooning, at the bar in the centre of the great room. Overhead was the ordinary, where dinner was served at 3 o'clock. A peculiarity of that apartment was, a large fan suspended above the centre of the table, worked by a waiter, which swept with its fresh breeze the whole length of the table, cooling guests *and* dishes, and effectually driving away the flies.

roduction of railroads terminating on the North River, the improvement of the piers, the enormous influx of passengers by the North River steamboats, which all land on that side, have renovated Greenwich street and the streets between it and Broadway, so that in these, too, all private residences have disappeared, and warehouses of the most spacious dimensions and costly construction have ejected, by golden appliances, the old dwellers of the First and Third Wards. Even Columbia College, with its pleasant grounds, sadly invaded in later years by the encroachments of Trade, and its secular trees of ages, beneath which generation after generation has sported, is sorely beset to pack up and be off up town ; but it has deep roots, and may yet stand its ground for a time.

Nor must I fail to record, as a very marking event in the life of this great City, the introduction in the Autumn of 1825 of the Italian Opera by the as yet unapproached *Garcia troupe*, which first taught us to appreciate music. No one whose attention has been at all turned to the subject, can fail to contrast the educated taste for, and real enjoyment of, good music, now prevalent in our city, with the mere uninstructed musical instincts, which before the appearance among us of the *Signorina*, and the troupe of which she was the "bright particular star," lavished all their admiration on *Incedon's* ballads (his "Black-Eyed Susan" always brought down the house at the old Park) and *Philips'* falsetto sentimentalities.

But in the same year, and almost in the same month with the canal came the Italian troupe, and soon took the town captive ; many, indeed, very many, went to listen through fashion, and scoffed often at what seemed to them unintelligible jargon of speech, and confused mingling of fiddles and trombones and the human voice divine. But insensibly even the scoffers were charmed, first into listening, then into feeling, and finally into comprehending and admiring. The taste for this higher phase of art was widely diffused, and a new sense was revealed—it may almost

be said—to our people, by the consummate performances of Garcia and his matchless daughter, and their companions. Hence the welcome since that day given to the various operatic *troupes* which have visited us, and to individual artists, such as *Ole Bull* and *Sivori*, Jenny Lind and Catharine Hayes, and to that most refined attraction provided in summer at the Castle Garden, for those who are bound down to the city, of exquisite music on our exquisite bay, at prices which all can compass.

It is not extravagant to speak of him to whom we owe the first introduction of the opera, himself a native New-Yorker, the late DOMINICK LYNCH—alas! to how many was his death a deep grief—as well-deserving of his countrymen, for introducing and cultivating among them the knowledge and love of such music.

But again let us pause, and look back, to mark some other and earlier changes of customs and of places. As to public markets, we now have eleven, besides the general authority to sell meats and vegetables in private stalls all over the City.

Of public markets in 1802, and there were then none other, there were five: the Exchange Market, across Broad street, between Pearl and Water streets; the Fly Market, at the foot, and the Oswego Market, at the head of Maiden-lane, with its front on Broadway, and Bear Market—now Washington Market—on the North River.

The Park, or that part of it occupied by the City Hall, was graced with the Alms House. The present Hall of Records was the Debtor's Jail; and, corresponding with it, on the Broadway side, but of which no trace now remains, was the Bridewell—a building of severe aspect, but by no means destitute of just architectural proportions. It was taken down about fifteen years ago. Murray street in 1802 extended as a paved street across the Park.

The State Prison was established in this City about the commencement of the century, and a secure and extensive edifice was erected on the shores of North River. A high

wall surrounded the edifice, upon which armed sentinels paced their constant round. A part of the building, with its cupola, still stands—far inland now, for there are several streets between it and the river; but the State Prison was removed to Sing Sing, and two more, one at Auburn, in the centre, and one at Clinton, in the north part of the State, have since been added. For the Bridewell, in the Park, the prison in Centre street—commonly known as the Tombs—was finally substituted. It was commenced in 1834, in what is styled Egyptian architecture, and was finished in 1836. A more unsightly, gloomy structure—perhaps therefore not inappropriate—is rarely to be seen. The Alms House and Hospital at Bellevue superseded that in the Park, after an intermediate pause at the building in the rear of the City Hall, in which many of the Courts are now held, and the offices of various civil officers. To the noble structures which of late years have sprung up on Blackwell's and on Randall's Island, for a Penitentiary, Asylum for the Insane Poor, Workhouse and Asylums and Schools for the thousands of destitute children, snatched from ignorance and vice, and educated to usefulness and honor, I can only make a passing reference, as eminently creditable to the liberality and humanity of the City.

Nor can I do more than hastily enumerate some of the private institutions which have been founded within our period, and still flourish, for the alleviation of human suffering, for the reformation of youthful criminals, or for the promotion of religion and knowledge.

The New-York Hospital, of ante-revolutionary foundation, caused to be built in 1818, at Bloomingdale, the *Asylum for the Insane*, which now affords to this most afflicted class of human beings all the solace that can be provided by science, humanity and constant and active supervision on the part of the Trustees against abuse—so easy, alas! and too often so natural in such institutions.

In 1817, the *Institution for the Education of the Deaf*

and Dumb was founded, but its present commodious and spacious edifice was not completed and occupied till 1834.

The *Institution for the Blind*, established in 1831, was placed in its present eligible building in 1839. Both these institutions are of private origin, but are liberally aided by the State, which provides permanently for the expenses of a certain number of deaf mutes, and of blind from each County. Pay-pupils, moreover, are received and exceedingly well taken care of, and instructed in both establishments.

The *Orphan Asylum*, founded May 1, 1806, by ladies, has been a blessing even in this life to its founders, not less than to the recipients of its charities. Two of these founders, Mrs. Hamilton, the widow of the great Alexander Hamilton, and Mrs. Divie Bethune, the widow of a prosperous New-York merchant of that day, still survive—far beyond the extreme limit of four-score years—but whose age is not sorrow and vanity, but receives all men's reverence, and rejoices in the success of the good works of earlier days.

The *Leake and Watts Orphan Asylum*, opened within the last seven or eight years—a noble charity founded on the liberal bequest of an old New-Yorker, Mr. J. Q. Leake, and enhanced by the liberality of another old New-Yorker, Mr. Watts, who, in behalf of the institution, waived a claim he had on Mr. Leake's legacy.

The *Colored Orphan Asylum*—also the result of female benevolence—organized in 1836; the *Half-Orphan Asylum*, and the *Roman Catholic Orphan Asylum*, all open their doors and provide shelter, food, raiment and education for those otherwise without resources on earth.

The *Society for the Relief of Poor Widows with Small Children*, the first institution of the kind in this country or in England, was founded about the beginning of the century, and was organized in good time to relieve many who were left destitute by the yellow fever, which so severely scourged this City and Philadelphia at the close

of the century. Its beneficiaries for the year '48, (the last report accessible to us), numbered 388 widows, with 1,023 small children.

The *House of Refuge*, for the reformation of Juvenile Offenders, was established by private subscription. Its beneficial action was soon so obvious, that it was recognized by the Courts; and to it were consigned youthful prisoners—novices in vice—whom it was reasonably hoped to reclaim by secluding them for a time from evil associations and temptations, and giving to them education and a trade.

But Houses of Refuge, and Houses of Benevolence, Penitentiaries, Prisons and Penal Laws, are all powerless, comparatively, without Popular Education. This truth was deeply felt, as, in the early swell of our commercial prosperity at the commencement of the century, and the rapid growth of our population, Crime and Ignorance increased too. The Society of Friends—always earnest and forward in good works—were largely instrumental in measures for widespread popular education; and they were well and successfully aided by De Witt Clinton, on so many grounds entitled to the lasting gratitude of his native State. Through his potent co-operation the *Public School Society* was incorporated in 1805. This Society immediately caused schools to be opened in different parts of the city, and actually employed persons to go about and seek out children whom they might educate, either gratuitously, or at a cost so small as hardly to constitute a consideration for any family. They were successful, eminently, and until the year 1842, had the field to themselves, except in the parochial and Sunday Schools kept up by different religious denominations. In 1842, from considerations which this is not the occasion to discuss, the system of *Ward Schools*, wholly supported by taxation and affording gratuitous instruction, was authorized by the Legislature, and these two educating bodies go on in their respective spheres, harmoniously, and, it is hoped, beneficially. The number of schools in charge of the Society is 115; that of the Ward Schools, 45;

the latter, however, accommodating more pupils than the former.

There is still another class, the *Corporate Schools*, or those connected with Colleges, Orphan Asylums, or incorporated Academies and Benevolent Associations, all which receive aid from the State in proportion to the number of their pupils.

The amount apportioned for the year 1849, for all these schools, by the Board of Education, was \$199,783, of which \$39,853 was received from the State ; the balance of \$160,600 was raised by taxation on the real and personal property of the citizens of New-York. The whole number taught in these schools for 1848-9, was 83,595.

And I may find no more fitting opportunity than this to say of your Society, Mr. President, that it, too, has nobly done its part toward public instruction. Founded at first simply as an institution of benevolence—for the exercise of charity toward less fortunate brethren or their widows and children—you did not fail soon to perceive that charity, which hopeth all things and believeth all things, might be most beneficially employed in educating as well as supporting the children of unsuccessful or unfortunate members ; and thence the step was easy and natural to a school for the gratuitous education of the children of the indigent, and for the establishment of an Apprentices' Library and Reading-Room. The success of the school led to a further enlargement of it, and now, in addition to the children of indigent members, it receives pay-pupils, and thence derives funds for the library and reading-room ; hence the flourishing condition of the school, the library, and the lecture-room of the Society. It is a proud thing for your Society, to be able to say that you have a school of 570 scholars, in two departments, about equally divided as to numbers of boys and girls, taught by nineteen teachers, and that the instruction, in addition to a sound English education, includes the French language, painting, drawing and music—

the true humanities, which refine the mind while adding to its resources and its powers.

Your library, too, of some 15,000 volumes, which I am rejoiced to see by the last annual report is freely and largely availed of by the apprentices, is all the while sowing good seed, which cannot fail of yielding in after time a precious harvest. Thus it is that the Mechanics of New-York are trained, and thence it is that as a body they are not excelled in intelligence, in character, and in real and substantial value to the community and to the country which they adorn, by any other class of citizens.

I cannot but remember, moreover, standing where I do, that the building in which we are now assembled was originally erected by an association of which I had the honor to be a member, for a High School, and that it prospered well for several years under the charge of Prof. Griscom,* who, at a great age, still survives. This school aimed to give, and did give, in both departments, male and female, higher education than was then attainable generally at the common schools; but these now are equal to the best, and the High School Association was dissolved and its property sold—returning, as far as I can remember, to its stockholders, nearly the whole of their original investment, besides the satisfaction of doing, as may be hoped, some good in the cause of education.

That property purchased by your Society, and rendered more accessible as well as more valuable by the addition of a lot on Broadway, through which an entrance is effected from that great thoroughfare, instead of being, as originally, from Crosby street, is still sacred to education and knowledge, and in hands that *will* see to its prospering and progressing in that holy cause. I rejoice to stand again in this well-filled hall, as I was wont to stand occasionally

* Soon after this address was delivered, the venerable John Griscom died, on 25th February, in his 77th year, at Burlington, New Jersey.

long years ago, in my visits to the High School, and to bear anew my testimony, to which the flight of years and the mature observation of men and events should impart some added weight, that no man can go amiss, in this our day and generation, who lends his aid and influence, however feeble they may be, to advance the cause of sound knowledge, founded upon sound morals. The world around us, on our Southern Continent and in Europe, is heaving with the throes of peoples struggling for the common rights of humanity; here we enjoy them *all*, and *all* enjoy them; and while we are mindful to train up the young, alike by precept and by example, to good knowledge and good morals—the only sure foundations of rational liberty—we shall preserve, and deserve to preserve, those rights.

The introduction and use of *Gas* for lighting our streets and houses, was one of the improvements which just preceded the completion of the Canal, and was thus ready for the great growth thereby imparted to the City.

London and other European cities had for some years been partially or wholly lighted by gas, and great had been the benefits in the prevention of crime, so much favored by the “darkness visible,” which was so usually the characteristic of the old oil street-lamps, and in the security against accidents.

In March, 1823, the New-York Gas Light Company was incorporated in perpetuity, with a capital of \$1,000,000—of which less than half was paid in when the Company was organized, and commenced work—and to this day only \$750,000 have been called in, leaving one-fourth of the capital to be availed of when or if circumstances require.

Samuel Leggett was first President of the Company, and so continued from April, 1823, to July, 1827, when he was succeeded by *Wm. W. Fox*, who still holds and efficiently executes that office. *Timothy Dewey* was the first

Manager, and after visiting Europe to familiarize himself with the management of gas-works there, entered on his duties in June, 1823, and remained in charge of the works till October, 1831, when he was succeeded by *John Morton*, who still remains as manager.

The apparatus first put up was for the manufacture of Gas from *oil*, and was imported from England, the requisite machinery at that time not being made in this country. Mains were laid, benches of retorts were put up with one gas-holder of 15,000 feet capacity, which was found sufficient for the commencement of operations. The price first charged for gas from oil was *one dollar* for 100 cubic feet. On the 1st of May, 1828, this was reduced to 90 cents, when *rosin* was gradually introduced and used with oil, till, at the close of 1830, oil was discontinued entirely, being found too expensive—the cost for ordinary whale-oil averaging 26 cents per gallon.

With the introduction of a cheaper material, the price of the gas became cheaper, falling to 80 cents in 1829, and again to 70 cents in 1830, at which last rate it remained till February, 1849, when coal was gradually tried, and the price fell to 60 cents. As it soon appeared that coal was the cheapest material—the rosin furnaces were removed, benches of retorts for coal being substituted, and the subsequent fall in price of the gas has been rapid and great, viz. :—

Aug. 1849,	.	50 cts.	May 1850,	.	35 cts.
Nov. 1849,	.	40 cts.	Jan. 1851,	.	30 cts.

and 30 cents is now the price.

Although rosin is occasionally used, it was abandoned as the material in November, 1849, and the gas is now made wholly from English coal, two-thirds Cannel, and one-third Newcastle.

The following table shows the comparison between the Rosin Gas Works, and the actual Coal Gas Works :—

For Rosin.

17 benches of 6 retorts each,	. . .	102 retorts
1 do. 10 do. . . .		10 "
		112 retorts

In different parts of the city, there were	
gas-holders,	9
Contents,	156,000 cubic feet.

The works were then at the corner of Centre street and Hester.

For Coal.

The works are at Avenue A, East River, between 21st and 22d streets.

They use	120 retorts.
Gas-holders,	9
Containing	530,000 cubic feet.

Within the last two years the works have been greatly extended, on the most approved modern appliances and plan. About *sixty miles* of iron main-pipes are laid, and over 2000 public lamps are supplied in the district embraced by the Company of about 1000 acres—that is, all the city south of Canal and Grand streets.

All the theatres, the principal hotels, and very many shops and private houses in this district are supplied with gas.

There are some 200 men constantly employed in manufacturing and distributing the gas, and the weekly amount of wages paid, is about \$2,000.

MANHATTAN GAS LIGHT COMPANY.

Chartered February 26th, 1830, capital \$500,000. In 1847, the capital was increased to \$1,000,000. This Com-

pany supplies that portion of the city lying north of Grand street. The gas was originally produced from rosin, and was first delivered to the public on the the 15th of April, 1835. In 1837, the gas was made from coal and rosin. In 1838, the use of rosin was discontinued, since which time the only material employed has been coal. All the coal is imported, and the proportions used are two-thirds Cannel, and one-third Newcastle.

In 1835 the price charged for Gas was \$7 per M. cubic feet.						
"	1837	"	"	"	6	" "
"	1838	"	"	"	4½	" "
"	1839	"	"	"	4	" "
"	1851	"	"	"	3½	" "
"	1852	"	"	" is	3	" "
In 1838 the amount of Gas made was 13 Millions cubic feet.						
"	1841	"	"	"	16	" "
"	1846	"	"	"	37	" "
"	1851	"	"	"	140	" "
At the close of 1847 the total length of pipes laid, was 45 miles.						
"	"	1851	"	"	"	112 "

The original works were constructed under the direction of Timothy Dewey, an American Engineer, but alterations to adapt them to the use of coal instead of rosin, were made on the suggestion of Thomas G. Barlow, an Engineer of reputation, who arrived from England shortly before the Company began the delivery of Gas. All the apparatus was imported.

For several years this Company struggled hard to preserve its existence ; the portion of the city assigned to it, presented a very different appearance from what it does at this time, and the prejudice against the use of gas in private houses, confined the sale almost exclusively to the small shops in the few business thoroughfares which at that period were to be found up town.

As repeated experiments, and the knowledge gained by experience, enabled the Company to improve the quality of the gas, its use in dwellings became more and more ex-

tended, and as the consumption increased, the price was reduced.

Although the coal from which the gas is produced has to be imported, and although the cost of labor and materials is such as to require double the capital that would be required in England, yet gas-light in New-York is now the cheapest as well as the best light that can be used. Its cheapness, convenience, cleanliness and safety, have caused its introduction into almost every house that has been built within the last two years, and the probability is, that in a very few years, the use of gas, from its extreme low price, will become universal.

The Manhattan Gas Light Company now supplies

	3104 Dwellings,
	2718 Stores and Work-shops,
	125 Churches,
	187 Public houses,
	14 School houses,
	9 Market houses,
	10 Police Station houses,
	3 Theatres,
	1 Metropolitan Hall,
	9 Hotels,
Total,	<hr/> 6,180 Consumers.

The Company also supplies gas for and lights 4,500 street-lamps. From 200 to 300 men are employed, and the weekly amount paid for wages varies from 1,500 to 2,000 dollars.

But the crowning glory and surpassing achievement of the latter part of the half-century, is the Croton Aqueduct. For many years—dating back before the War of Independence—projects were entertained and discussed for an adequate supply of water to this City; and in 1774 Christopher Collis actually constructed a reservoir somewhere between Anthony and Spring streets, near the present line of Broadway, into which water was pumped up from wells,

and for the expense of this work paper money was issued by the Corporation. The supply of water, however, was insufficient, and the quality not good ; but the occurrence of war put an end to all schemes for improving both quality and supply. After the peace, and through successive periods up to the year 1835, scheme upon scheme was discussed and dismissed—looking now to the waters of the Collect, then to the Bronx, and then to wells, of which the contents were to be raised by mechanism to a height that would permit their distribution through the streets and into houses. In the year 1802 the Manhattan Company was incorporated, for the professed purpose of furnishing to the City pure and wholesome water ; and although the result proved that to be chiefly a cover to the obtaining of perpetual and irrevocable banking privileges, the Company did nevertheless undertake to furnish water, and from their wells, dug between Chambers and Cross streets, raised the water into a reservoir, whence it was distributed through wooden pipes to various parts of the town. The quantity, however, was inconsiderable, and the preference was general for the water of wells and pumps. Many of the latter are remembered, doubtless, by all who hear me—standing sometimes on the edge of the sidewalks, sometimes in the centre of our most frequented streets. A few of these obsolete memorials of a past age still survive, and possibly are still relied upon by old people, who find their brackish fluid—such is the force of custom—preferable to the pure and limpid Croton.

But in 1835, at the Spring Election, it was put to the vote of this City—Water or No Water—and the decision to be made in view of the fact that the plan in contemplation looked to nothing short of bringing the Croton River into our streets, at an expense of many millions of dollars, to be raised by loan, of which the principal and interest were to be paid by taxation. The result was *for* Water and the Taxation necessary to bring it, 17,330 votes ;

against it, 5,963. It would not be a fair representation of this topic, if I did not add here, as among the proofs which, to an honest searcher, abound in the history of our City, that the wealth of its citizens is always ready, cheerfully and largely, to contribute to the common welfare—that the *Noes* on this occasion were from Wards which paid the smallest amount of taxation, while the heavily taxed Wards, in other words, the Wards in which riches most abounded, voted, almost unanimously, *Yes*. In three Wards only, IXth, Xth, and XIIIth, the noes preponderated; in the XIth the vote was nearly balanced—Yes 880; No 873. In the Ist Ward the vote was, Yes 1,417; No 27! Yet in that year the taxes collected from Ist Ward were \$246,181, while those from the three negative Wards were:

IXth Ward	\$33,608	
Xth Ward	26,834	
XIIIth Ward	15,847	
Total	\$76,289	
Adding the balanced XIth Ward	45,060	121,349
Balance		\$124,832

So that the Ist Ward alone paid more than twice the tax, and would, therefore, be in the same proportion liable for future assessments for the cost of the Aqueduct, as the three negative Wards and the one balanced Ward.

This view is strengthened by the additional fact, that the whole tax for the year 1836 produced \$965,602; of which the four dissenting, or indifferent Wards, above enumerated, paid only \$121,349, or about one-eighth.

I add, as a matter within my personal knowledge, that upon the suggestion, that as no provision was made in the ordinance of the Corporation for submitting the question to the people, for the supply of tickets—usually provided in political elections by the candidates or their party—there

might be danger that the vote would be disregarded, a few gentlemen of property subscribed a fund of several hundred dollars, to defray the expense of printing tickets and of employing persons at each poll to distribute them.

The vote being affirmative, the noble enterprise was at once undertaken, and in seven years it was completed in a manner so thorough and substantial, that after ages will bless the liberality and foresight of the generation which authorized the Aqueduct, and the skill and completeness with which it is constructed. Neither time nor fitness will permit any detail as to this structure. It must suffice to state the amount of its daily blessings, so far as mere figures can approximate thereto; the daily current poured into our streets and houses by the Croton from the Distributing Reservoir measures 30,000,000 gallons, and on Saturday, when, as the last Report of the Board says, "zealous housewifery puts every street-washer in requisition (whether necessary or not)"—*ten millions* of gallons more, or forty million gallons in all are used, or rather *misused*—wickedly misused, I am almost tempted to say, by a population (within the water district) of not more than 430,000 persons, or 90 gallons!—(think of it) 90 gallons to each individual. The whole supply of the City of London, with a population of two millions, does not exceed 40,000,000 gallons. Is it not, then, a duty—a moral obligation, I will call it, of every good citizen to prevent, as far as in him lies, the enormous and shameful waste which this bare statement of the quantity thrown daily into our City so clearly establishes.* This lavish distribution of water is accom-

* A striking illustration of this *immoral* waste of one of the chief necessities of life, is furnished in the following extract, from the Report of the Croton Aqueduct Department, made to the Common Council since this lecture was delivered:

"There are in this city a great number of small jets with basins beneath, on the counters of groceries, and bar-rooms, confectioneries and bakeries. * * * * These, viewed separately, seem trifling affairs, and incapable of producing any marked effect upon the general supply, but

plished through a subterranean net-work of iron pipes, of which the entire length exceeds two hundred miles ; in other words, if laid in one line, they would reach from the Reservoir to Boston.

I cannot leave this subject without quoting here the emphatic warning—in which each one of us is personally interested, not only for his daily comfort, but for his security from fire—given in the latest Report of the Croton Aqueduct Board, “That the last drop of water which the works, in their present state, can supply, is *now* daily delivered in the City—a supply more than equal to any and all the legitimate wants of a million and a half of people.” Yet this enormous supply is wasted by less than *half a million*. It may be well to add, however, that the actual supply is limited by the intervention of the High Bridge—across which only two mains, of 36 inches, are now laid. By substituting for them more or larger mains, the quantity may be very largely increased ; for “the reserve in the Croton River,” as the Commissioners state, “and the numerous lakes in which it has its sources, subject to future

under the pressure of a head of more than 100 feet, which in many cases is the fact, a small orifice will discharge a prodigious quantity of water in the course of a year.”

The Board accordingly determined to exact rent for those jets, which produced great grumbling, as though it were a right thus to waste the water. “In one case” continues the Report, “where a party was charged nine dollars for a jet upon his counter, he paid it with such strong expressions of the imposition practised upon him, as induced the writer to visit the place and gauge the water actually flowing from it. It was found to discharge half a pint every 10 seconds, and as it was admitted that the flow continued throughout the year, it follows that *one hundred and ninety-seven thousand one hundred gallons* annually are thus wasted—equal to furnishing a family of 20 persons each with 27 gallons of water daily for the whole period. Had the rate fixed by ordinance, of 3½ cts. for 100 gallons, been charged in this case, as it ought to have been, the amount collected would have been \$68 99 instead of \$9.”

The Report assumes it to be within the truth to say that there are in the City 500 such jets, each discharging as much water, making an annual waste from this source alone of *one hundred million gallons*.

control, would be enough for a larger city than any now on the globe.”

Another series of great works also, most important to the health and conducive to the comfort of the City, is more recent than the construction of the Aqueduct, and is still in progress—the system of underground draining through sewers. The Bureau of Sewers and Drains is very properly attached to the Croton Aqueduct Department. The first sewer in our City of any extent, was that in Canal street But, laid down as an isolated work, and without the consideration that should have preceded it, it is, as compared with those since constructed, an inferior work. Still it answers its purpose, though at greater cost for clearing out frequently than should be. But the unskilfulness of its construction, and the inconvenience resulting therefrom, caused a prejudice against sewers, which it required much time and much exertion to overcome, and which, perhaps, but for the necessity of the case, would not have been overcome. By some strange oversight, this sewer was constructed without the simple contrivance of air-traps—a curve, in the manner of the syphon, somewhere in the culvert, in which a column of water, always standing, prevents the upward escape of the offensive odor from the sewer. For the lack of this, the dwellers on and around Canal street were exposed to most fetid smells, rising through the culverts into the upper air, and great was the outcry, and great the consequent depreciation of property. Yet for a time, although sewers properly constructed and furnished with these traps had long existed on the flat plain occupied by Philadelphia, the authorities of our City could not be made to understand the cause, or to seek for a remedy which laid at their very door. Happily, the growth of the City and its natural conformation compelled a resort to sewers elsewhere, and then Science and Experience were brought into play to do their perfect work, and so far as could be done to cure the defects in the Canal street work. The introduction there of the air-traps has nearly removed the former nuisance

The form of the island is that of a turtle's back, sloping from the centre to each side, and naturally shedding the water. Hence, in the lower part of the City, where the tongue of land is narrow, and the distance from the centre to the river short, the shed of the rain and other water in the streets is natural and easy on the surface to each river. But as the City advanced northward, and without rising in level at the centre, became much broader at the sides, the natural flow of water over the surface could no longer be resorted to. The level of the ground at Trinity Church and at Union Square above tide-water is the same—about forty-five feet. But while that difference of level was quite sufficient at Trinity Church to drain the water along the short lines of Rector and Wall streets, to the rivers, it became quite another thing at Union Square, where the river is nearly a mile distant on either hand, and the intervening ground very irregular.

The State of New-York had, with a wise forecast of its and our great future, as early as 1807, appointed three Commissioners to lay out the City of New-York into streets and squares. These Commissioners were De Witt Clinton, Gouverneur Morris, and Jno. Rutherford. Josiah Randall, Jr., was their Engineer and Surveyor. Their report was made in 1811, and accepted by the Corporation. That report, accompanied with a map, laid out the whole City in noble avenues and spacious streets, numbered up to One Hundred and Seventy-sixth street, and designated, as to their corners, by durable marble monuments, firmly fixed in the ground. These Commissioners had no authority to alter or regulate the level of the future avenues and streets, but simply to run and mark the lines by permanent monuments; and to that magnificent plan we owe it that there are no lanes nor alleys in the new City, but that twelve noble avenues each 100 feet wide, running parallel and in the direction of the island, give access to the City, and that these are cut at right angles by numerous streets, every

tenth one of which is also a hundred feet wide, and the narrow streets sixty feet in width, or ten feet wider than the boast of Philadelphia—Chestnut street.

Happily, we say, this plan was adopted, for but for it most of the region lying east of the Bowery, including the Stuyvesant Farm, and again around Union Square, would have been cut up into most unsightly curves and gores. The main avenue of the old Dutch City was the Bowerie. It was called the Old Boston Road—within the memory of many living—and the lines of the farms and lands circumjacent were all run in reference to it as a base. Its course was crooked; hence, when the new streets laid down upon the Commissioners' map came to be traced out, it was found that they would often make curious work with the old lines, and leave here and there some most oddly shaped fragments. Either Mr. Gouverneur Morris, a man of fine fancy, as well as of profound attainments, or the State Surveyor, Mr. Simeon De Witt, whose odd fancy scattered over our State in such inimitable confusion, and puzzling juxtaposition—Romes, Palmyras, Uticas, and Atticas, and who mingled up the Brutuses and Pompeys, with Onondagas and Oneidas—either Mr. Morris or Mr. De Witt, in referring to this interference of the new lines with the old, and to the fragmentary parcels of lots that would be thereby carved out, spoke of these lots by an allowable figure—as “the Children of Necessity.” At a subsequent period, when the advance of population rendered it desirable to reduce these fragments to form and order, some literal matter-of-fact people petitioned the Legislature for an act to consolidate and re-form these “Children of Necessity,” and the Legislature, whose forte lies not in fancy, taking the expression as *legally descriptive* of the objects referred to, actually passed a law for *discontinuing these “Children of Necessity”*—and great were the beautifying consequences of that law.

Broadway and the Bowery, the two great thoroughfares

of the City, may be said to start from one common trunk below the Park—and after, in their long lines, traversing, respectively, such different scenes, and witnessing modes of life so diverse, they come together at Union Place, as originally called, from that circumstance, and now Union Square. This square—beautiful, spacious and ornamental as it now is—is made up almost wholly of these “Children of Necessity.”

The old Potters’ Field, together with a portion of the “Ludlow Farm,” through the efforts of Mr. A. S. Pell, a man of enlarged views and active spirit—had been thrown in the year 1827 into that spacious area, now known as Washington Square.

About 1831 the City seemed to take a start northward, and for the first time improvements by blocks of houses, uniformly built, beyond the then abodes, were introduced. To Mr. J. Green Pearson, who built up Le Roy Place on both sides with houses of some uniformity in exterior, and some pretension to architectural proportion, the praise is due of being first in this path. Mr. Seth Geer, in like manner, constructed the handsome colonnade row in Lafayette Place, and Mr. Thos. E. Davis, boldly advancing into the domain of the martial Stuyvesant, old “Hard-koppig Piet,” actually commenced digging down hills and filling up valleys—under the very eye of the grim old warrior, as his likeness still hung on the walls of the old ancestral house—and planted St. Mark’s Place with its brick houses and paved street, in the heart of his rural homestead, his blooming Bowerie. The large extent of salt meadow belonging to that estate, was literally on the point of confiscation, and all the other low land similarly situated, when the policy of sewers to pass off the water under ground was introduced, instead of persevering in the original plan of the Corporation to fill up the grounds to the level requisite to pass it off over the surface. The contest in behalf of the sewers was long and earnest. Prejudice,

arising from the unskilfully made Canal street sewer, was zealously appealed to ; interest, in the employment which the removing of the millions of loads of earth requisite for the filling in, would afford to laborers and cartmen, was strongly pressed ; but good sense, and indeed common justice finally prevailed—for if the high filling had been insisted on, the low grounds ceased to have any value as property. Within twenty years, and before the point was decided, lots on the Salt Meadow were sold at \$25 each, which now would command as many hundreds. Happily, the sewers carried the day. The first consequence was, that the general level of the projected streets could be lowered without injury, and the land was so completely reclaimed by the sewers as to be equal in value almost to the upland ; and we now see in the very heart of the Salt Meadow, Tompkins Square, the largest as well as one of the most tasteful in the City, containing some 15 or 16 acres, and surrounded by houses and churches alike substantial and costly. The cost of the land taken for that square, in 1834, was \$89,000. From that day the policy of sewers was permanently adopted, and our streets are now pierced by some 83 miles of these subterranean galleries—which carry off to the rivers without trouble or inconvenience to the citizen, but on the contrary, to his infinite accommodation, all the water of houses, baths, streets, &c., and this at an annual cost not exceeding \$116 per mile for all charges of repairing, cleaning, and keeping in order.

Another citizen who has devoted rare intelligence, precious years, and large sums of money to the advancement, embellishment, and solid progress of the City, is Samuel B. Ruggles. In 1831, he became possessed of a portion of the old Duane Farm. This farm had a front of about 400 feet on the Bowery road, and ran thence easterly almost to the river, with some upland, but much morass, overgrown with cat-tails, and through which wandered a stream known as the Crumme-Vly, or Winding Creek. The heirs, five in

number, estimating the value of the property according to its frontage on the Bowery, divided the farm by that front, 400 feet, into five equal parcels, and thus constituted narrow strips of land half a mile, nearly, long, and 80 feet wide. One of these fifths having been acquired by Mr. Ruggles in the year 1831, he forthwith set himself at work to make it available. Between him and the actual City was the Bowery Hill, 20 feet above the level—behind him morass. It was clear that the latter was of little value without the former. After incredible difficulties, he succeeded in obtaining both the Bowery Hill and the morass, covering together more than *fifty acres*, and very soon tumbled the one into the other to the amount of some three millions of loads, at a cost of \$180,000—and squaring the lines as he went along, and regulating the lots, he planted on the edge of the morass, in December 1831, Gramercy Park, by gratuitously giving the whole of the 66 lots it comprises—now worth two hundred thousand dollars—and attaching to the grant a condition that ten dollars a lot should be annually paid forever by the residents around the square, as a fund out of which to plant, preserve, and adorn it. Disdaining, too, the personal vanity of entailing his own name upon this creation of his own energy and property, he preserved the name by which the old Duane estate was known, the Gramercy Seat—corrupted, probably, from the Crooked Creek, or Crumme-Vly, which meandered through its meadow.

Next came, in 1833, Union Square, made up chiefly of those “Children of Necessity” to which allusion has heretofore been made, fragmentary lots, which, after much trouble and labor on the part of Mr. Ruggles and others, and with the aid of the Legislature, were reduced to the slightly and admirable square, with its wide open area of streets around, which we all now admire. The assessment for lands for this square was \$110,000, and it was imposed upon lots as far as Gramercy Park, of which

very many belonged to Mr. Ruggles, who thus contributed largely in money as well as personal exertions to this embellishment of the City. In walking, upon one occasion, round this square with Rev. Dr. Hawks, Mr. Ruggles was expatiating upon the value, for all time, of such squares in a great city. "Come what will," said he, "our open squares will remain forever imperishable. Buildings, towers, palaces, may moulder and crumble beneath the touch of Time ; but space—free, glorious, open space—will remain to bless the City forever !" "And do you not perceive the reason?" was the prompt return of Dr. Hawks, "Man makes buildings, but God makes space," thus stamping, as it were, the signet of the Almighty on the labors of Mr. R. to perpetuate to his fellow-citizens, for all time to come, Heaven's boon of free air and open space. Mr. Ruggles also cut through his own property, two wide streets, parallel with and between the Third and Fourth Avenues, and being allowed by the Corporation to name them, he again avoided the temptation of personal feeling, and called the one Irving Place, after our admirable fellow-townsmen, whose gentle and genial humor and fine literary taste and talents have illustrated our City and nation—the other he named, with the just pride of a New-England man, Lexington Avenue, after that battle field where the first blood was shed for independence.

Being now largely interested in real estate, and accustomed to embrace a wide range in his views of the causes which accelerate the growth and add to the prosperity of cities, he was not long in perceiving that a new impulse, analogous in character to that imparted by the Erie Canal, was needed to determine the onward movement of our City. He accordingly early embraced and warmly advocated the project of a railroad through the southern tier of counties to Lake Erie. The scheme was gigantic, and the physical obstacles to its success not less so ; but Mr. Ruggles is of that temper of mind which cannot readily be

discouraged, and he persevered. He subscribed largely to the stock of the Company, became one of its most active Directors, and in company with James G. King, the then President of the road, was present at the putting of the first spade into the ground for the commencement of the work, and emptied on the future track, now vexed by incessant trains, the first wheel-barrow load of earth, on 5th Nov. 1835. Being at that time myself the editor of a newspaper, I was cognizant of the untiring efforts of Mr. Ruggles, by his pen, his purse, and his personal exertions, to advance the interests of this new enterprise, and to arouse to it the attention of all classes of our citizens; for such is the fortunate *solidarity* (a good word recently introduced into our common vocabulary) of all classes under our free and equal institutions, and in our industrious community, that every undertaking which benefits any one class, must benefit all. The enterprise was sustained, and although long delayed and finally executed by other hands, it should not be forgotten now, in the prosperous days of this magnificent and beneficent work—hardly less valuable as a political bond connecting us indissolubly with the great West, than as a broad highway along which pass both men and the produce of man's industry, in countless numbers and of unreckoned value, with great speed and great economy—it should not be forgotten, I repeat, now, when the skies are bright and the future is certain, who, in the dark morning—far-seeing and hard-working—were the friends of the enterprise.

Still in conformity with his settled opinion, that nothing could more surely conduce to the prosperity of the City than a wise application, alike of individual and the public wealth and effort, to promote well-considered public improvements, Mr. R. acceded to the urgent desire of his friends to be a candidate for the Assembly. He was elected, and placed at the head of the Committee of Ways and Means, and in that capacity made the famous Report of

1838, on the value and future productiveness of the Canals, on the necessity of their enlargement, and on the expediency of still further extending the system. He was in advance of his time, and yet time has more than confirmed all his estimates and sanctioned all his views; and that Report, which the timid, the incredulous and the malicious stigmatized in its day, according to the idiosyncrasies of each, as rash, impracticable and absurdly visionary, is now the enduring record of far-sighted sagacity, well-stated premises, and irresistible conclusions.

Nor were his efforts to bring into speedy and vigorous action these wonder-working engines of public prosperity, confined to the legislative hall, the closet, or the City. Leaving behind him the property which for years he had been anxiously and arduously moulding into shape, he accepted the post of Canal Commissioner of the State, and in that more extended field, for several years and through the darkest period of the commercial revulsion succeeding 1836, urged forward toward completion—and with untiring energy—those great channels of internal commerce, which are now pouring such copious and ever-swelling streams of wealth into New-York, their common centre.

But while thus in the public service, his own private interests severely suffered. Yet, with temptation constantly besetting him to let out piecemeal and for mere suburban pursuits and for inferior buildings, the large real estate he possessed around Union Square and Gramercy Park, incumbered as it was by heavy debt, he adhered to his original purpose, so far as he could effect it, to render that one of the most desirable and beautiful parts of the City. He coveted the feeling of that statesman of old, who was able to say, that he had found his city of wood and left it of marble. He would not relinquish his generous but self-sacrificing plan. He persevered, and for the public he triumphed—and the fine squares and noble streets of the neighborhood we have referred to remain, and will remain, while he, the

early, liberal and far-seeing projector of the whole, whose life-long labors had virtually called it into being—borne down at last by the crushing and fatally accumulating burdens of his twenty years' struggle—but cheerfully surrendering, without stint or limit, and to the last dollar, in payment of his obligations, the estate so justly earned, has lost all, save that which leaves him rich indeed, the respect, confidence and affection of his friends, the resolute and self-sustaining spirit which in the end is sure to conquer misfortune, and the just pride that for the city of his residence, for his country, and for the future he has not labored nor suffered in vain.

I fear I may have seemed to encroach on your time and attention in giving so much extent and prominence to the acts of a single individual. But he is my friend. Fortune has dealt hardly with him, and as I know his worth and the sacrifices he has made for our City, I could not resist this opportunity, which a review of the growth of the City so naturally presents, of bearing my testimony to the name, services and character of Samuel B. Ruggles as a public benefactor.

Although restrained by the exigencies of time and place in delivering this address, from quoting, as I desired to do, from Mr. Ruggles's famous Report of '38, some of its striking passages, I will not deny myself the pleasure, if that address is to be published in a form somewhat more permanent than that of a newspaper, to give these extracts.

After a thorough examination of the ability of the State to make the proposed enlargement of the Canal, and an estimate, which time has shown to be below rather than above the reality of the future productiveness of the Canal, Mr. Ruggles, speaking in the name of the Committee, thus concludes :—

“They will not attempt to measure the consequences which the completion of a great and harmonious system of intercommunication, extending into the uttermost recesses

of the interior, and concentrating within our borders the trade of the most populous portion of the continent, will produce, in augmenting the aggregate riches of our State;—in covering its surface with opulent cities;—in swelling its commercial marine;—in securing its political supremacy; and in enlarging, in all respects, its prosperity, power, and glory. Nor will they seek to compute the pecuniary results which this vast and ever increasing stream of inland trade, flowing through our territory for all future time, will produce in augmenting the wealth of its commercial metropolis. The history of Venice, in its palmiest days, stretching her long line of islands and colonies far into the East, and controlling by her position the commerce of Asia, presents but a feeble picture of the splendor and riches which our own great mart must eventually attain.

* * * * *

“Least of all will they attempt to compute the pecuniary consequences of these great arteries of trade, in cementing and preserving the union of these free and flourishing republics. It is not for New-York, or her sons, to ‘calculate the value’ of that sacred bond. But if we would catch a glimpse, however imperfect, of the gigantic stake which is depending on our prudence and patriotism—if we would count the cost of ruined cities, and desolate fields, of our lakes and rivers, obstructed by fleets and fortresses in war, and by commercial restrictions still more destructive in peace, we may contrast Europe as it is, convulsed by centuries of strife, and broken into jarring, disunited, and discordant communities, with Europe, as it would have been, had its whole population been united like ours, at the very origin of their governments, under one common law, speaking one common language, and bound by one common constitution.”

* * * * *

I must add to the above quotation, one other, from a *vindication* published by Mr. Ruggles in 1849, of the

Canal policy recommended by him in 1838. This extract shows at once the lofty and patriotic views with which Mr. R. looks at these great enterprises, while exhibiting at a glance, and by a most striking comparison with the Rhine, the priceless value of our Canals :

“The Canals are a noble property, and deserve good care and attention. They ought to be in friendly hands. With the moderate means the Constitution has left to our present efficient and faithful officers, the locks of the Erie Canal may be finished and opened for the reception of the enlarged boats by the spring of 1851. But the progress of the main work must necessarily be slow and painfully protracted; and exert whatever effort we may, the great and final measure of deepening the channel and realizing its largest benefits, can hardly be finished in time to enable some of us, upon whom the shadows of evening are stealing, to participate in the joyful emotions which an achievement so important would naturally enkindle. But the smaller gratification we may yet enjoy, unless, indeed, a Board of hostile incumbents, foreign to the interests, and distrustful of the value of the noble work, shall again obtain its control, and, on a smaller scale, re-enact the scenes of 1842.

“Its rich revenues, its teeming commerce, entitle it to better, to more kindly care. The stupendous mass of products floating on the Canals of which it is the main and vital artery, reached in the last season of navigation, the enormous amount of 2,736,230 tons, exceeding by eleven hundred thousand tons, the amount transported in 1843; while the ‘products of the forest,’ which its enemies in 1844 declared had ‘diminished,’ actually increased in five years from six hundred and eighty-seven thousand tons, to one million and eighty-six thousand.

“The amount paid upon the Canal in 1848, for tolls and freight, was five millions eight hundred thousand dollars, and in the active season of 1847, eight millions four hundred thousand dollars.

“As an avenue of trade, it now all but outstrips every channel of commerce, natural or artificial, in the New World or the Old. The transportation on the great river Rhine, flowing more than 500 miles through the heart of Europe, furnishing a safe and commodious outlet for many millions of inhabitants,—its navigation wisely and sedulously improved by the seven Sovereign Powers adjacent to its banks,—is exceeded by that of the Erie Canal nearly threefold.

“Nor is its enormous activity impaired, to any sensible extent, by the long line of railroads lying on its margin, and enjoying the full benefit of the winter monopoly. The descending cargoes passing over the railroads in the whole of the year 1848, were but 29,999 tons, while in the seven months of navigation of the same season, the Canal brought down eleven hundred and eighty thousand tons to tide-water.

“The pecuniary amount of the Canal commerce, which in 1843 had reached seventy-six millions, ascended in 1848 to one hundred and forty millions of dollars; and yet the representatives of the people of New-York, in framing its organic law, were assured, and some were weak enough to believe it, that the revenues had reached their culminating point, or were fast approaching it.

“For one, the writer of this hasty sketch has ventured to believe, and yet continues to believe, that an immense interior region of unequalled fertility, and truly imperial extent,—the destined centre of American population, commerce and power,—as yet but in the early morning of its days,—lies just beyond our western borders, and plainly within our reach,—and that it does not fall within the narrow ken of the men of the present hour, fully to encompass the vast extent of its future wealth and greatness.

“To connect the ocean with a region thus wide spread and magnificent, by commodious, constant, and ample

means of intercourse,—to bind in bonds of mutual and ever-enduring interest and affection, the far distant portions of our favored land,—to knit together, for coming ages, the members of our national Union,—he has always believed, and yet believes to be the bounden duty of the government of this State.” * * * *

With these extracts I leave it to the general judgment, if Mr. Ruggles be not rightly characterized as a man of large and sagacious views and most enlightened patriotism.

Thus far I have only spoken of successful changes. But amid much prosperity we have not been exempt from serious and sweeping calamities—embargoes, non-intercourse, war, yellow fever, cholera, destructive fires—each in its turn disastrous, yet each soon effaced almost from memory by the swelling tide of prosperity that followed.

The embargo and non-intercourse were, as the judgment of history must now pronounce, I think, most unwise, as they were most calamitous and oppressive measures. To see, as I well remember to have seen, this great seaport suddenly struck with paralysis—its wharves silent, the grass literally growing upon them—the multitudinous branches of industry connected with commerce and navigation abandoned—the sailmaker, the blockmaker, the ropemaker, the carman, the rigger, the blacksmith, the worker in copper, the calker, the stevedore, the sailor, cut off from all employment—the forests of masts motionless, and the revenue cutter and the custom-house boats the only moving crafts upon our matchless bay, saving a few coasters—this was an experiment upon the fortunes and the law-abiding character of our citizens fearful to attempt, and wicked to persevere in, as it was persevered in. For more than a year and a quarter, from December, 1807, to March 1809, New-York, as a commercial city, lay dead, and yet, let it be added, to the eternal honor of New-York, in most unimpeachable testimony of her loyalty to the Union, of her obedience to law—to a law that was slaying her—that no

attempt was made, no pretence ever set up, at *nullification*; though her sufferings were grievous, and though thousands able to work, willing to work, and only prevented from working by what seemed an arbitrary and, to very many, an unconstitutional exercise of the federal power—for the embargo, as imposed, was unlimited in point of time—yet did they not seek by violence either to overthrow the law or the constitution. If there were no other page in the history of our City than that which records its endurance under such a trial and those of a subsequent non-intercourse, it might well be claimed, that her fidelity to the Union, to the constitution, and to the laws made under it, is alike beyond question or parallel. But many are the pages in her history which present her to the whole country as always faithful, always loyal, always self-sacrificing. It is therefore, I confess, not without some emotions of indignation, in recollecting this remarkable characteristic of all her days, that I have seen self-constituted Union Committees undertaking to in-dorse to the republic the fidelity of New-York to the Union!—a work of supererogation surely, in any men! a work that I will not characterize by its fitting epithet, on the part of men of whom not one in ten probably knew the City in the days of her commercial agony—days which, indeed, tried men's souls, and proved to the world the fidelity and patriotism of the New-York merchants, the New-York mechanics, and of the New-Yorkers of all classes and pursuits, in 1808–9–10. The embargo was, indeed, removed in March, 1809, as to all countries but Great Britain and France. With these two countries a strict non-intercourse was substituted for the embargo, and the cruisers of England, and her orders in council, and the decrees of Napoleon of Berlin, Milan, &c., and the conjoint robbery of the prize courts of both countries, rendered such commerce as was not prohibited by our own laws most hazardous.

Again, in April, 1812, another embargo, limited this time to 90 days, was laid, to be followed in the month of June by the Declaration of War against England; and this war,

by reason of nearly three years' alternate embargo or non-intercourse which preceded it, found us unprepared with almost every thing essential to its vigorous prosecution, except brave hearts and willing arms ; for then manufactures were all but unknown to us.

The City was at that time undefended by any permanent system of fortifications at or below the Narrows, or on the side of the Sound. Now the works of Fort Schuyler, at Throg's Neck, which effectually shut out any attack by the way of the Sound, and Forts Hamilton and Lafayette at the Narrows, on the Long Island side, water and upland batteries at Staten Island, Fort Wood at Bedlow's Island, and the works at Governor's Island, would render any attack upon the city, even by a very powerful fleet, most hazardous. But, in 1812, all was open, so far as the defences provided by the general government were concerned ; half a dozen frigates might have burned the city, or laid it under contribution.

The City, however, evinced no fear nor backwardness to breast the shock of war. Temporary works were thrown up at the Battery, and on the heights of Long Island, and at Harlem, to guard against any land attack, and men of all ages and all professions turned out and labored as volunteers in digging and constructing these works.

The whole army was employed on the frontiers, and this metropolis was left to the care of her own population and of the militia of the neighboring counties ; there were reviewed in our streets, by Governor Tompkins, who was Commander-in-Chief, about the close of the campaign in 1814, more than 23,000 men, of whom only 500 were regulars—the rest were militia well armed, well drilled, for the most part, and reliable for defence. It was a glorious line, extending from the Battery up to Sandy-lane, and warmly did that patriot chief, Daniel D. Tompkins, feel the pride of that hour, when his native State was wholly intrusted to his keeping, and to that of its own sons ; and there stood

before him, ready to follow him to the death, so goodly an array of its citizen soldiery. Happily their services in the red field were not called for, and Peace soon came to heal the disasters and dry up the tears of War, and relaunch our country on its prosperous career of peaceful and all-pervading commerce.

The immense impulse with which the country—now absolutely bare, by reason of the war and the antecedent interruption of commerce—rushed forth to buy and to sell, to export and to import, inevitably brought a collapse, which those who remember 1818–19, will not have forgotten. In 1823 came back, the first time for many years, the yellow fever, and business was partially suspended, and the places of business changed. The Banks and Custom-House were removed to Greenwich Village, and I used daily to ride on horseback from the corner of Bleecker street, over open commons, to the Custom-House located at Greenwich. The streets below the Park were cut off by a high board fence, running from river to river. Intercourse with the infected district was forbidden, and the residents therein, who did not voluntarily withdraw, were forcibly removed from the district by order of the Board of Health. I remember, one fine summer afternoon, sailing from Hellgate in a small boat, past the whole east front, and round the Battery, past the west front of the City, within the infected district, without seeing on the wharves, or up the long line of streets that run to the river, a single human being, or any sign of life. But this scourge passed, and the effects of over-trading, and those of the pestilence, soon disappeared before the constantly advancing prosperity and population of the City. The completion of the Canal, to which reference has already been made, poured wealth of every sort into our streets, and not only repaired losses but created new riches.

The next great physical scourge that fell upon us was the first Cholera of 1832, when panic did the work of

death almost as surely as the fell disease. Never within my knowledge of her was New-York so "frighted from her propriety." The destroyer was indeed formidable, and remedies were unknown. The very mysteriousness of its origin, of its approach, of its attack, added to the terror ; and sedate and even unselfish men lost or seemed to lose their senses.

It is always to be recorded to the honor of that profession which, however much men may jest about it when in health, the sick man flees to with implicit confidence—the Medical Profession—that they, with few exceptions, stood to their posts—the post of danger as of duty—and that whether in hospitals, in hovels, or in stately mansions, these faithful men were ready at every summons. One other class, too, should be mentioned with like honor—the Clergy—who, with rare exceptions, remained to soothe, where it might be the last agonies of the dying, and at any rate to consign the dead with decent rites to the bosom of the common mother. I shall never forget the impression on my own mind of a solitary walk—literally solitary—during the height of the distemper, from Wall street, where was my office, to Houston street, where was my residence, along Broadway at mid-day, without encountering a dozen human beings.*

The fire of the night of 16th of December, 1835, came next with its desolation ; and fearful indeed was that night of cold and conflagration ; but who does not remember and still admire the courage, the constancy, the indomitable

*I must be permitted to particularize two individuals, one of each profession, whose zeal and fearless disinterestedness in ministering to the sufferings of their fellow-creatures fell within my own observation. *Dr. J. W. Francis* and the *Rev. Dr. Berrien*, neither of whom ever hesitated, whatever the locality, to attend, when summoned to the bedside of the sick and dying. Laurens street, near Canal, then the abode of as much wretchedness, destitution, filth and pestilence as could well be heaped together, was the special scene of the *Rev. Dr. Berrien's* ministrations. *Dr. Francis* was every where, where need and danger were greatest.

spirit which triumphed over the loss of millions of property—a total destruction of acres of inhabited houses and richly filled stores? Who does not recall, with some glow of enthusiastic thankfulness that he too is a New-Yorker, when he looks back upon that scene of desolation, the work of one disastrous night, and remembers that while the embers were yet glowing, the contriving head had planned, and the daring hand had begun to execute, new and more substantial structures, a much improved arrangement and disposition of the streets—permitted by the extent over which the flames had swept—at comparatively moderate cost?

The Merchants' Exchange, severe in its simple grandeur and massive proportions, is one of the noblest monuments of the spirit of that day—replacing as it does, upon a much more magnificent scale, the Exchange destroyed by that fire.

The Mexican war—next to be enumerated among our calamities—for war is always a calamity—gave no check to our City, while one of its fruits, the acquisition of California, is now daily adding to our wealth; not without some drawback in the lives which that acquisition cost, and in the commercial losses, not few nor light, in its overdone market. What the Future may have in store for us of loss or disaster, it is happily not given to mortal eye to discern. But the Past is our warrant, that come what may, while true to ourselves, we cannot be shaken from our pride of place, nor cease to be the metropolis of the Western world.

Let us gather up, if possible, and state in as brief form as can be arranged, the more striking results of the fifty years elapsed.

I. At its outset New-York numbered some 61,000 people; it now numbers 515,394, without including what properly are its suburbs; Brooklyn, Williamsburgh, Jersey City and Hoboken. Brooklyn especially is such—for the whole number of inhabitants in Brooklyn in 1800 was 3,298. There are now in Brooklyn 96,850, and this growth, it must be perceived at a glance, is due mainly to New-York.

II. The exports from this City in 1800 were of the value of about nineteen millions of dollars. Those for the year 1850, of the value of fifty-three millions. The imports for the same year, at this port, reached the enormous value of a hundred and eleven millions of dollars.

III. The number of licensed cartmen is a good indication of the active business in the city. For 1801 there were 1,000; there are now 3,265. There are, moreover, 935 other cartmen, whose special business, under the name of dirt cartmen, it is to transfer the high to the low grounds, to fill in wharves, make new streets, &c. Omnibuses, unknown in the earlier day, but rendered necessary by the stretching out of the city on one narrow line, now run in various directions to the number of 589, performing the distance of three miles each trip, many of them, for the moderate price of six cents.

IV. Of Churches and other places of worship, there were, in 1801, thirty-two where now there are two hundred and sixty.

V. Of Public Schools—that is, open to all and at the public expense—there were *none* then; now there are some 250, educating annually some 80,000 pupils.

While enumerating other agencies whereby the welfare and growth of New-York has been advanced, I may not, for special reasons, omit the marvellous agency of the printing press, of which the powers are now, thanks to the ingenuity and skill of our New-York mechanics, and especially of R. HOE & Co., multiplied almost an hundred fold.

Up to the year 1825, the iron hand-press was in general use in newspaper offices—and it is of such only that I can speak with knowledge. The ordinary product of this press was 250 impressions an hour, with the aid of the pressman and a boy to ink the types; with the aid of a third person, to “fly” the sheets, by great exertion, and for a short time, double that number of impressions could be obtained. But, in order to issue the newspaper, the process

was to be repeated, as one side only was printed at a time. In the year 1825, being then the editor of the *New-York American*, I imported, together with Messrs. Dwight, Townsend and Walker, the then editors of the *Daily Advertiser*, the first single cylinder or Napier press ever seen in this country. Mr. Walker, of the *Daily Advertiser*, went to Europe in person to make the purchase, and see the press in operation; but, with all the advantage of his visit, it would have puzzled us much to put it up and in operation here, but for the ingenuity of Mr. Hoe, who at once put every thing to rights. The press was worked by hand, for the application of steam came later. It served to print the *Daily Advertiser*, which was a morning paper, and the *American*, which was an evening paper, and its ordinary product was about 1,000 impressions the hour.

Messrs. Hoe & Co. were not long in surpassing the imported press; and, in 1830, made one, also of a single cylinder, for the *Commercial Advertiser*, which could throw off from 1200 to 1500 impressions in the hour.

Once launched in the career of progress, our American go-aheadness soon accelerated the pace, and the patent improved *Double Cylinder Press*, which could turn out 5000 impressions an hour, was produced.

But the demand was still for more rapid work; a demand, it may be remarked, occasioned in part by the very success thus far achieved, and which stimulated by the greatly diminished price, and greatly increased circulation of the penny papers, absolutely required more rapidity in striking off the sheets.

Then came, from the same ingenious mechanics, Hoe & Co., the *ne plus ultra* of printing presses, as one might almost be tempted to call it, if we had not already seen such marvellous improvements—the *Type Revolving Machine*, as the new fast press is called.

The capabilities of this press seem only limited by the power of those who feed it, as is the technical expression, with paper.

On one large horizontal cylinder the types—or form—is secured, and as it revolves, the form of types, freshly inked each time, is carried to four, six, or eight horizontal impression-cylinders, between which and the large cylinder passes the blank sheet of paper to receive the impression; and of these 20,000 can be made in an hour by an eight-cylinder fast press! at a cost, including steam-power, not exceeding \$2! The first cost of such a press is *twenty thousand dollars*.

But none of these presses are adapted to printing both sides of the paper at once, and the press-work consequently has to be done twice for every newspaper.

But this, too, has been overcome, at least for the printing of books, by Messrs. Hoe & Co., who, as I am informed, have just completed a press adapted to type or to stereotype, with two cylinders, a form on each, which perfects the sheet at one operation. It is made to *register* accurately, and, to use the words of the ingenious inventors, “is to be used exclusively to print school-books for the million.”

It is most gratifying to know that not only the invention of these wonder-working presses is American, and of New-York, but that all the materials of which they are made, saving some small quantity of cast-steel imported from England, are American too.

Messrs. Hoe & Co. employ some 350 hands in their factories, and pay them an average weekly amount in wages of *three thousand dollars*.

There are many other topics that I laid in my way, and concerning which I would gladly speak. The progress in machinery and in machine-shops and foundries, is especially noteworthy, and the progress and improvements in ship-building; but I must pass them by.

But there is one establishment now about to be opened to the public use, of which I must say a word or two—*the Astor Library*. The origin of that you all know. It is the noble creation of a man whose own vigorous mind and ener-

getic character, unaided by much early education, made for him a name and a place among men which the loftiest might envy. Dying, and in order to insure to others advantages he himself had lacked, he bequeathed \$400,000 for a public library, where all men, of every degree, pursuit, and calling, might seek knowledge, and get understanding. The building is now finished, and as soon as its walls are sufficiently dry, the books, already numbering more than 60,000, and to which accessions are making, and to be made continually, will be placed in it, and it will then be open for the use of all. By a most fortunate coincidence, and through the exercise of that rare sagacity which Mr. Astor possessed of finding the right man for the thing in hand, the librarian chosen by him before his death, Mr. Jos. G. Cogswell, is exactly *the* man, possibly the only man in the United States for the place. His heart is in the work, and to great zeal and uncommon literary and scholastic attainments, he adds a knowledge of books in all languages and in all departments unequalled, it may be said undoubtingly, by any other man in the United States. He is, besides, as methodical, exact, and cautious as the most strait-laced business man; and it is not too much to say, that, in his hands, and by his skill, economy, and knowing how to bide his time in purchases, he has more than doubled the value of the original bequest. This will not be deemed extravagant when I add, that the cost of the 60,000 volumes already purchased, comprising the choicest selection of books, in all languages, many of them most magnificent in plates and binding, will not average more than *one and a quarter dollar per volume*. The books in the Congress Library, just burned, averaged above \$4 a volume, and those in your Demilt Library will average, as I am informed, nearly \$5. The Astor Library, for the people, is one of the proudest trophies of which New-York can boast in the half century just closed.

But it is time to bring this retrospect to a close—a retro-

spect which, however full of interest in facts, cannot have been other than wearisome in the detail. Its moral remains to be applied.

We have seen in the half century just ended, how great the progress of New-York, keeping pace therein only with the progress of our country. Shall the close of the half century of which the first year is now about expiring, witness to our descendants and to all future time, that the efforts and the toils, the trials and the triumphs which pre-faced and ushered it in, were wisely appreciated by its children? Shall the close of the year 1900 find this City as far ahead of us in wealth and power, in the means of education and the means of comfort, in the enterprise that advances and the arts that adorn civilization, as this present period is ahead of that fifty years ago? These are questions which nearly concern us, for we in part, and those whom we are to train and influence, must answer them.

I have faith in that future, because I have confidence in the present. With our growth in wealth and in power, I see no abatement in those qualities, moral and physical, to which so much of our success is owing; and while thus true to ourselves, true to the instincts of freedom and to those other instincts which with our race seem to go hand in hand with Freedom—love of order and respect for law (as law, and not because it is upheld by force)—we must continue to prosper.

The sun shines not upon, has never shone upon, a land where human happiness is so widely disseminated, where human government is so little abused, so free from oppression, so invisible, so intangible, and yet so strong. Nowhere else do the institutions which constitute a State, rest upon so broad a base as here, and nowhere are men so powerless and institutions so strong. In its wilderness of free minds dissensions will occur, and in the unlimited discussion in writing and in speech, in town-meetings, newspapers, and legislative bodies, angry and menacing lan-

